Longitudinal Evaluation of a Risk-factor Model for Adolescent Suicidality

by

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I certify that the thesis entitled:

**Longitudinal Evaluation of a Risk-factor Model for Adolescent Suicidality**

submitted for the degree of:

is the result of my own research, except where otherwise acknowledged, and that this thesis in whole or in part has not been submitted for an award, including a higher degree, to any other university or institution.

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ABSTRACT

This research developed two best-fitting structural equation models of risk factors for adolescent depression and suicidality: a core model, which included parenting factors, gender, depression, and suicidality, and an extended model, which also encompassed personality traits (Introversion and Impulsivity) and mood factors (Anxiety and Anger). Further, this research investigated the consistency of model fit across time (i.e., 1 month & 12 months) and samples, and explored the effectiveness of the ReachOut! Internet site as a psychoeducational prevention strategy for adolescent depression and suicidality. Gender, age, and location differences were also explored.

Participants were 185 Year-9 students and 93 Year-10 students aged 14 – 16 years, from seven secondary schools in regional and rural Victoria. Students were given a survey which included the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979), the Millon Adolescent Personality Inventory (Millon, Green, & Meagher, 1982), the Profile of Mood States Inventory (McNair & Lorr, 1964), items on suicidal behaviour including some questions from the Revised Adolescent Suicide Questionnaire (Pearce & Martin, 1994), and questions on loss and general demographics.

Results supported an indirect model of risk factors, with family factors directly influencing personality factors, which in turn influenced mood factors, including depression, which then influenced suicidality. At the theoretical level, results
supported Attachment Theory (Bowlby, 1969), demonstrating that perceived parenting styles that are warm and not overly controlling are more conducive to an adolescent’s emotional well-being than are parenting styles that are cold and controlling. Further, results supported Millon’s theory of personality (1981), demonstrating that parenting style influences a child’s personality.

Short-term intervention effects from the internet site were a decrease in Introversion for the full sample, and decreased Inhibition and Suicidality for a high-risk subgroup. Long-term age effects were decreased Inhibition and increased Anxiety for the full sample. There was also a probable intervention effect for Depression for the high-risk subgroup. No location differences for the risk factors were found between regional and rural areas.
Chapter 1: Overview

Suicide is now a leading cause of death by injury and, overall, a leading cause of death for people under 30 years of age in Australia, including motor vehicle accidents (2003 Australian Bureau of Statistics 4102.0; Victorian Suicide Prevention Task Force Report, 1997). Youth suicide, then, is a critical issue. Many studies have been conducted with clinical samples of adolescents who have attempted suicide (e.g., Goldney, 1981; Kosky, Sawyer, & Gowlan, 1990; Ritter, 1990). Fewer studies have been conducted with non-clinical populations of adolescents, investigating the factors associated with suicidal behaviour (e.g., Martin, Rozanes, Pearce, & Allison, 1995; Pearce & Martin, 1994a). Only recently has the relationship between the contributing factors been explored using the more advanced statistical process of structural equation modeling (e.g., Koslowsky et al., 1992). The current study surveyed secondary school adolescents and explored documented risk factors using structural equation modeling.

Previous research has identified several risk factors for adolescent suicidal behaviour. Categories include demographic factors (Pearce & Martin, 1994a), parenting behaviour (Martin & Waite, 1994), mood factors (Kingsbury, Hawton, Steinhart, & James, 1999), and personality factors (Beautrais, Joyce, & Mulder, 1999). Findings have been both elucidating and yet inconsistent.

Initial studies were conducted on clinical populations (e.g., Crook & Raskin, 1975; Goldney, 1981; Zubrick, Kosky, & Silburn, 1987). Identified risk factors included depression, family discord, gender of adolescent, age, and childhood parental loss. Later research focused more on non-clinical populations (e.g., Blatt & Homann,

More specifically, research on non-clinical adolescent populations demonstrates positive associations between depression and suicidality, parenting styles characterised by strong authority (Protection) and lack of warmth (Care), childhood parental loss through separation and divorce, and female gender of adolescent (Allen, Borman-Spurrell, & Hauser, 1996; Blatt, Wein, Chevron, & Quinlan, 1979; Blatt & Homann, 1992; Blatt & Zuroff, 1992; Toth & Cicchetti, 1996). However, research also suggests that depression may be the only factor to directly influence adolescent suicidal behaviour. The other factors may be implicated due to their effects on adolescent depression (Garrison et al., 1991; Rubenstein, Heeren, Housman, Rubin, & Stechler, 1989). This research drew upon previous research and theory to develop a core model of risk factors for the suicidal behaviour of adolescents in Year 9 (aged 14 - 15 years). The core model comprised gender, parental factors (i.e., Childhood Parental Loss, Parental Care, Parental Protection, and Inhibition), and depression.

Other research into adolescent depression or suicidal behaviour also identifies mood (i.e., Anger and Anxiety) and personality traits (i.e., Introversion and Impulsivity) as additional risk factors (e.g., Beutrais, Joyce, & Mulder, 1999; Benjaminsen, Krarup, & Lauritsen, 1990; Kashani, Goddard, & Reid, 1989; Kashden, Fremouw, Callahan, & Franzen, 1993). However, not all researchers confirm these findings (e.g., De Wilde, Kienhorst, Diekstra, & Wolters, 1993; Diekstra, Kienhorst, & de Wilde, 1995; Koller &
Castanos, 1968; Pallis & Jenkins, 1977). It is thus unclear whether these mood and personality factors are established risk factors. If so, questions arise concerning their relationships with the risk factors represented in the core model and also whether their contribution to suicidal behaviour is made directly via depression. Therefore, this research explored the roles of these additional potential risk factors through an extension of the core model to include these constructs. Further, this research explored possible differences between adolescents living in regional or rural areas of Victoria by drawing samples from both localities.

Finally, very little research has addressed the impact of interventions designed to reduce suicidal risk in adolescents. This research thus examined age effects and intervention effects upon the risk factors and suicidal behaviour. The intervention was a psychoeducational prevention strategy delivered through an internet site which was established in 1997 in Australia by the federal government, JJJ radio, and the Inspire Foundation. This evaluation contrasted findings from an experimental group tracked across one year with a control group who were one year older at study commencement.

After completing initial self-report measures, adolescents were introduced to the internet site, called Reach Out!. Students had access to the site at school throughout the year. The experimental group was tested again after one month and twelve months to assess both short-term and long-term intervention effects. Contrasts with the control group enabled age effects to be teased out from intervention effects.

In summary, the aims of this research were:

Phase 1:

1. To build and evaluate a core model of risk factors for suicidal behaviour in
Year-9 adolescents (aged 14–15 years);

2. To build and evaluate an extended model of risk factors for suicidal behaviour in Year-9 adolescents;

3. To determine whether risk factors impacted directly or indirectly upon suicidal behaviour or whether effects were mediated via depression; and

4. To explore possible differences in risk factors between adolescents living in regional versus rural areas of Victoria.

*Phase 2 (one-month follow-up):*

5. To investigate the short-term consistency of the developed models, and explore short-term intervention effectives from an internet-based psychoeducational prevention strategy for adolescent depression and suicidal behaviour.

*Phase 3 (twelve-month follow-up):*

6. To investigate the long-term consistency of the developed models, test invariance of the model on a new sample (cross-validation), and investigate long-term change in risk factors due either to age or intervention effects.

Chapter 2 provides an overview of the research investigating risk factors in adolescent suicide in both clinical populations and in non-clinical populations. Depression is shown to be a major risk factor involved in all expressions of adolescent suicidal behaviour. Models of risk factors are also developed and explored at an initial level.

Chapter 3 defines depression and reviews four modern theories of depression. Childhood attachment, developed through the role of parenting in infancy, is shown to
influence adolescents' views of themselves in relation to the world. Further, implications are addressed for subsequent vulnerability to depression which emanate from insecure attachment.

Chapter 4 considers different styles of parenting in relation to adolescent depression and suicidal behaviour. The Parental Bonding Instrument (PBI; Parker, Tupling & Brown, 1979) is presented as a valid measure of two key elements in parenting style, Warmth and Control. Finally, research into adolescent suicidal behaviour and depression that uses the PBI is explored.

In Chapter 5, Millon's theory of personality, which integrates parenting styles and infant bonding with adolescent personality, is presented. A comparison is drawn between Millon's parenting styles and the PBI parenting styles. The Millon Inhibited Scale is then shown to be another valid measure of parenting by reflecting parenting influences upon adolescent personality. Finally, models of risk factors are developed from these findings.

Chapters 6 and 7 present Phase 1 of the current study. Chapter 8 presents Phase 2 of the current study, and Chapter 9 presents Phase 3. Finally, Chapter 10 addresses general conclusions.
Chapter 2: Adolescent Suicide and Risk Factors

2.1 Overview

This chapter provides an overview of adolescent suicide and the research investigating risk factors involved in adolescent suicide in both clinical and non-clinical populations. Depression is shown to be a major risk factor involved in all expressions of adolescent suicidal behaviour. Models of risk factors are also developed and explored.

Early clinical studies of adolescent suicide were conducted with suicide attempters who were interviewed in casualty wards or who were psychiatric patients (e.g., Crook & Raskin, 1975; Goldney, 1981; Zubrick, Kosky & Silburn, 1987). Later research focused more on suicidal behaviour in normal population samples, using community groups or secondary school students (e.g., Garrison et al., 1991; Martin & Waite, 1994; Pearce & Martin, 1994a). Three factors do seem to consistently and significantly contribute to suicidal attempts and ideation: depression, a disturbed family life, and gender (Blatt & Homann, 1992; Husain & Vandiver, 1984; Kosky, Silburn, et al., 1990; Martin & Waite, 1994; Ritter, 1990).

2.2 Adolescent Suicide

In Australia, suicide rates have remained fairly constant throughout most of this century (Harrison, Moller, & Dolinin, 1994; Martin, 2002). Male suicides have averaged 21 per 100,000 population per year and female suicides have averaged 5.5 per 100,000. Generally, suicide rates have increased for both genders with age. Most suicides have been completed by older people. In recent decades, however, this trend has altered
dramatically, with a marked increase in suicides by young people. This is particularly true of young men between the ages of 15 and 24 years, for whom the suicide rate has nearly tripled since 1970 (Dudley, Waters, Kelk, & Howard, 1992; Kosky, 1987; Martin, 2002).

The combined national figure for suicide rates among males and females aged 15-24 years increased from 4.3 per 100,000 to 16.0 per 100,000 between 1964 and 1995 (Victorian Suicide Prevention Task Force Report, 1997). Male suicide rates alone increased from 10.5 per 100,000 in 1964 to 25.3 per 100,000 in 1995. In 1999, 22.3% of young male deaths were attributed to suicide. In urban areas, suicide accounted for 20.3 young male deaths per 100,000, and in rural areas, suicide accounted for 30 young male deaths per 100,000. In Australia, more adolescent males succeed at committing suicide than do adolescent females. This difference is largely because males more often use guns, a means which seldom fails, whereas girls are more apt to use the less certain method of pills (Australian Bureau of Statistics, 1997, 1999).

Whilst it is difficult to determine rates of attempted suicide, as many attempts go unreported, it is estimated that between 40,000 and 60,000 young Australians attempt suicide each year (Victorian Suicide Prevention Task Force, 1997). Further, it is estimated that the overall rate of self-injury increased from 55 per 100,000 in 1987 to 112 per 100,000 in 1995. The VSPTF data are based on people presenting to Victorian hospitals, excluding those discharged within four hours. The Task Force, therefore, suggests that these figures under-represent the true rate of self-injury by as much as 50%.
2.3 Research with Clinical Populations

2.3.1 Age and gender as risk factors in suicidality. Age and gender have been identified as risk factors for adolescent suicide in clinical populations. Husain and Vandiver (1984) analysed 167 case studies of child and adolescent suicidal behaviour reported in the literature between 1953 and 1980. Significant age and gender differences were found between those who threatened, attempted, or completed suicide. There was little suicidal behaviour in children aged under 12 years, and 76% of incidents were performed by boys. Suicide completions increased significantly for boys aged between 16 and 20 years, with boys performing 65% of successful suicides. Suicide threats or attempts increased dramatically among girls aged between 12 and 15 years, with girls performing 63% of suicidal behaviour during this pubescent stage. Also, suicidal ideation increased significantly with chronological age above the age of 12 years (Husain & Vandiver, 1984; Kosky, Silburn, & Zubrick, 1990).

That suicidal behaviour increases with age may be due to both social factors and cognitive factors as children move from primary school to secondary school, and into adolescence. Socially, older children and adolescents are exposed to many more serious life issues in films, books, and on the media than are younger children. This exposure may suggest to adolescents that suicide is acceptable.

Developmental psychology has thoroughly demonstrated the increased cognitive abilities of adolescents, who experience new creative thinking skills (Berger & Thompson, 1995). By age 15, adolescents not only problem-solve using logic and rational functioning, but are also able to further reflect, generalise, and imagine new
possibilities. Given these new capacities, adolescents regularly become idealists and social reformers. Lacking life experience and the right inner resources and outer support systems, an adolescent may easily become depressed, and even despairing, when faced with negative aspects of life which seem overwhelming.

2.3.2 Depression and family discord as risk factors in suicidality. Depression and family discord have both been cited as factors in adolescent suicide. Because all of the following studies investigated these two factors simultaneously, they are reported together in this section.

Kosky, Silburn, and Zubrick (1990) explored whether children and adolescents who attempt suicide differ from those who only engage in suicidal ideation. They sampled 340 outpatients in Western Australia who had an average age of 12.9 years. All had reported suicidal ideation, threats, and/or attempts in the previous 12 months. Depression was measured by a symptom checklist for the 12 months prior to assessment. A suicide attempt was defined as a “deliberate self-destructive behaviour in which there is a conscious or clearly apparent wish to die” (p. 39). Suicidal ideation was defined as “admission to suicidal thoughts on examination or verbalisation of suicidal intention” (p. 39).

Both attempters and ideators were high in self-reported depression (87% and 94%, respectively). However, Kosky, Silburn, et al. (1990) found that suicide attempters were significantly more likely than ideators to have reported persistent family discord (82% vs. 68%). Participants in this study were predominantly female, and all were depressed (Kosky, Silburn, et al., 1990). Further, there was no control group. Family discord was the one significant differentiating factor between ideators and attempters.
In a study in the Netherlands, Kienhorst, de Wilde, Diekstra, and Wolters (1992) explored the differences between depressed adolescents who attempted suicide and those who did not attempt suicide. The mean age of all participants was 17 years. Measures included the Depression Symptom List from DSM-III (1980), the California Psychological Inventory (Gough, 1964), the Family Environment Scale (Moos & Moos, 1981), and the State-Trait Anxiety Inventory (Kienhorst, Wolters, Diekstra, & Otte, 1987). The groups demonstrated no difference in levels of depression, but attempters reported significantly greater parental conflict, less parental support, more loss through separation and divorce, and greater emotional lability and withdrawal than did non-attempters (Kienhorst et al., 1992).

In an American study, Boergus, Spirito, and Donaldson (1998) tested 98 female and 22 male adolescents with a mean age of 15.1 years who presented at a hospital emergency room following a suicide attempt. Participants were given the Center for Epidemiologic Studies Depression Scale (Radloff, 1977), the McMaster Family Assessment Device (Epstein, Baldwin & Bishop, 1983) to measure various dimensions of family functioning, the State-Trait Anger Inventory (Spielberger, 1988), and the Reasons for Overdose Scale (Hawton, O'Grady, Osborn, & Cole, 1982). Adolescents who expressed a wish to die reported significantly greater depression and anger, and depression best predicted a wish to die. No control group was used, but this result would suggest that depression mediates the link between anger and suicidality. A further finding was that reasons for taking an overdose were more commonly intrapersonal reasons than interpersonal reasons.

In a previously mentioned study, Husain and Vandiver (1984) found that
depression was the most frequent precipitating factor for suicide completion. Relative to the suicide attempters, those who completed suicide also had more rejecting fathers. Husain (1990) similarly concluded that family-related factors appeared to be the most significant contributors to youth suicide. These factors included family turmoil, disturbed parent-child relationships, hostile and rejecting attitudes of parents towards children, and physical and sexual abuse. Family factors, then, have been shown to influence adolescent development and suicidal behaviour.

2.3.3 Childhood parental loss as a risk factor in suicidality. Another factor relevant to youth suicide may be parental loss, although there is disagreement in the literature. Crook and Raskin (1975) matched 115 non-suicidal depressed inpatients, at the National Institute of Mental Health in Maryland, USA, with 115 depressed inpatients who had attempted suicide. Almost 300 normal adolescents were used as a control group. Parental loss was defined as “the separation of a child from one or both natural parents for at least one year prior to the age of 12 for reasons of parental death, desertion, divorce, or separation” (p. 277). Adolescents who attempted suicide reported significantly greater parental loss for reasons other than death compared with the other two groups. Further, suicide attempters reported significantly more disturbed family interactions than the other two groups.

In an Australian study, Goldney (1981) also investigated the relationship between suicide attempts and parental loss. Goldney compared 110 young women with a mean age of 22.7 years who had attempted suicide with a control group of 25 women with a mean age of 27.4 years who had no history of suicidal behaviour. Loss was defined as “the permanent separation of a parent by either death or separation/divorce, up to and
including the age of 15 years" (p. 35). No difference was found for either death of a parent or levels of depression. By contrast, Goldney (1981) found that attempters experienced significantly more parental loss through divorce and separation than did non-attempters. Findings suggested that a childhood characterised by family disharmony, intentional separation of parent from child, lack of warmth, and over-control were associated with attempted suicide in adult life.

In Denmark, Benjaminsen, Krarup, and Lauritsen (1990) compared 30 psychiatric patients who had attempted suicide with 30 matched controls. All participants were aged between 18 and 29 years. Measures included the Own Memories of Child-Rearing Experiences (Perris, Jacobsson, Lindstrom, von Knorring, & Perris, 1980). Compared with normal controls, the frequency of parental loss due to divorce before the age of 15 years was significantly higher for attempters than for normal controls. No difference was found for parental loss due to death. Also, attempters reported their parents as significantly less affectionate and tolerant than did the normal controls, and significantly more rejecting and depriving.

Brent et al. (1994) compared the families of 67 suicide completers with 67 matched controls in the USA. Participants were all under 20 years of age. Significantly more completers than controls came from separated families and were reported to experience a lifetime history of parent-child discord. By contrast, Kosky, Silburn, et al. (1990) found that loss had no consistent effect for either idea tors or attempters. This was true for both males and females in this late-childhood and early-adolescent population. In the latter study, loss was defined as "a major loss or disruption of major attachments during the past 12 months (p. 40)." Again, no comparison was made with a Control Group.
2.3.4 Summary. Gender and increasing age are implicated as significant factors for suicidal behaviour in children and adolescents (Husain & Vandiver, 1984; Kosky, Silburn, et al., 1990). Females express more suicidal behaviour than do males, but males succeed at committing suicide more than females. Suicidal ideation, threats, and attempts rise significantly above the age of 12 years.

Studies of suicide attempts and ideation in clinical populations also report that both depression and family discord are significant risk factors (Benjaminsen et al., 1990; Husain & Vandiver, 1984; Kosky, Silburn, et al., 1990). Family discord includes hostile and rejecting parental attitudes toward children, persistent family conflict, disturbed parent/child relationships, lack of warmth, and abuse.

Childhood parental loss represents another significant factor in suicidal ideation and attempts, but only among older adolescents and adults, and only when the loss has resulted from separation or divorce, as opposed to death (Benjaminsen et al., 1990; Brent et al., 1994; Crook & Raskin, 1975; Goldney, 1981; Greer, 1964; Husain & Vandiver, 1984).

Research using clinical populations, then, has linked many variables with suicidal behaviour. These variables include gender, age, depression, family discord, and childhood parental loss. In these clinical studies, no clear relationships have been demonstrated to exist between these variables. Therefore, these variables, and the relationships between them, will be further investigated in this study.
2.4 Research Using Continuum Models with Clinical Populations

Suicidal risk is difficult to quantify, and the previously reviewed clinical studies have not attempted to quantify suicidal ideation or behaviour in any precise way. The levels of risk may refer to the lethality of the behaviour, the frequency of the behaviour, or the intent of the behaviour. Four known investigators, however, have construed suicidal risk as a continuum ranging from non-suicidal behaviour to completed suicide. Based on empirical evidence, Smith and Crawford (1986) identified four categories of suicidal behaviour. Non-suicidal persons were those who showed no ideation or suicide behaviour. Ideators were those who considered suicide but did not develop any particular plan. Planners were individuals who formulated plans but had not made an actual attempt. Finally, attempters were those who made one or more past attempts to kill themselves.

Schneidman (1985) conceptualised suicidal risk along a continuum from no intent to die through to a definite wish to die. Similarly, Pfeffer (1986) classified suicidal risk along a continuum from mild risk (used a means which realistically would not have endangered life) to serious risk (used a means which realistically could have led to death or which necessitated medical care). Conceptually, Pfeffer's suicide continuum proceeds from ideas, to threats, to attempts, to completed suicide. Pfeffer's continuum corresponds well with that proposed by Smith and Crawford (1986), except that Smith and Crawford identified moderate risk as planning of suicide where Pfeffer identified moderate risk as threats of suicide (i.e., degree of sharing with others).

Smith, Conroy and Ehler (1984) quantified suicidal risk by developing a Lethality of Suicide Attempt Rating Scale (LSARS). The LSARS measures the probability of
death as the main basis for calculating risk. Therefore, thoughts or ideas of suicide were not rated. Individuals had to harm themselves in order to be given a rating. Suicide risk ratings were based on an 11-point scale where 0 = death is an improbable result and 10 = death is almost certain regardless of medical intervention.

In a USA study, Ritter (1990) used the LSARS to identify and investigate adolescents at high-risk and low-risk of suicide. The participants were 47 girls and 23 boys with a mean age of 15.7 years in a residential program for those at risk of self-harm or suicide. All participants completed the Suicide Ideation Questionnaire (SIQ; Reynolds, 1987) and the Youth Self-Report (YSR; Achenbach & Edelbrock, 1987).

Ritter (1990) found that high-risk boys reported significantly greater depression than did low-risk boys. The same difference was not found for girls.

Age effects were also found for boys (Ritter, 1990). Depression, self-harming behaviour, and frequency of suicidal thoughts and actions all increased with age. No such trends existed for girls. Moreover, no gender differences were evident for the measures. Age and gender differences will be further explored in this study, using a continuum approach to suicidal behaviour.

**Risk Factors in Non-clinical Populations**

2.5 *Research with Non-clinical Populations*

All of the previously cited studies into adolescent suicide used clinical samples. Consequently, findings may not generalise to a non-clinical adolescent population. More recent studies have investigated factors in adolescent suicidal behaviour with normal populations. From now on, the term “suicidality” will be used to refer to any suicidal
behaviour, including ideation, threats, plans, self-harm, and attempts. Most studies reported prevalence of suicidal behaviours, and investigated more than one risk factor simultaneously. Risk factors included gender, depression, and family factors. Therefore, this section will report prevalence data and explore the risk factors study by study, in the previously mentioned order. Mood and personality traits as risk factors will be addressed in the following section.

Pronovost, Cote, and Ross (1990) assessed 2850 secondary school students in Quebec, aged between 15 and 19 years, for suicidality. Measures included a depression scale (Radloff, 1977) and a self-devised questionnaire on suicidality. Fifteen percent of students reported thinking seriously of suicide at one time, and 3.5% of students reported having attempted suicide at some time. Females (18.5%) reported significantly more suicidal ideation than did males (12.6%), and suicidal students demonstrated significantly higher levels of both depression and childhood parental loss through separation or divorce than non-suicidal students.

In the USA, Rubenstein, Heeren, Housman, Rubin, and Stechler (1989) investigated adolescent suicidality by identifying both risk factors and protective factors related to suicidality and psychopathology from previous research (e.g., Garmezy, 1987; Kessler, Price, & Wortman, 1985; Rutter, 1987). Risk factors were certain psychosocial stressors and psychological characteristics of the adolescent, and protective factors included certain characteristics of the family relationships.

Rubenstein et al. (1989) compared secondary school students comprising 204 females and 96 males, with psychiatric inpatients comprising 30 females and 15 males. The mean age of both groups was 15.5 years. The measures were two questions on
suicide (i.e., “I have tried to hurt myself” and “I have tried to kill myself”), the Beck Depression Inventory (BDI; Beck & Steer, 1987), the Beck Hopelessness Scale (Beck, 1987), the Adolescent Stress Scale (McCubbin, Patterson, Bauman, & Harris, 1982), and the Family Adaptability and Cohesion Evaluation Scales (FACES II; Olson, Portner, & Bell, 1982).

Cohesion items measured the adolescent’s perception of positive emotional involvement of family members, consultative decision making, and common interests. Adaptability items measured the extent to which family rules were perceived by the adolescent to be flexible, open to personal input, and negotiable. Suicidal behaviour was defined as “self-destructive behavior engaged in with the stated intent of hurting or killing oneself” (p. 61), a definition which lacks specificity. Also, it is important to note that the suicide items address severe suicidal behaviour.

Of the 300 school students, Rubenstein et al. (1989) found that 20% were suicidal, with 18% reporting self-harm and 2% reporting attempts. By contrast, 53% of the hospitalised group were suicidal. In the secondary school sample, suicidality was as common among boys as among girls, whereas in the hospital sample, suicidality for girls was greater than for boys. Parents of secondary school suicidal students experienced significantly less separation and divorce than did parents of the hospitalised suicidal adolescents (17% vs. 61%). Because all other measures were similar between groups, further analyses were performed on the secondary school sample only.

When risk factors were analysed using logistic regression, Rubenstein et al. (1989) found that suicidal students reported feeling significantly more depressed than did non-suicidal students. Personal loss was also significantly associated with suicidality, and
included peer loss as well as family loss through separation and divorce. Surprisingly, family dysfunction per se was not significantly related to suicidality in this adolescent sample. Rubenstein et al. (1989) suggested that in their primarily middle-class sample with intact families, severe family dysfunction was less prevalent than in other samples.

As is true of all of the previous cross-sectional studies, Rubenstein et al. (1989) were not able to unravel causal relationships for risk factors. The following study will adopt a longitudinal design to explore the predictive validity of risk factors for suicidal ideation.

In a three-year study, Garrison et al. (1991) explored: (1) the frequency, distribution, and stability of self-reported suicidal thoughts in a community sample of young adolescents, and (2) the relationships between suicidal ideation in young people and other factors, including depressive symptoms and perceived family environment. The 515 male and 558 female students attended six secondary schools in the USA and had a mean age of 12.8 years in the first year of the study. Participants were administered the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The measure of suicide ideation consisted of three equally weighted items, all low on a severity continuum. These items were “I felt that life was not worth living,” “I felt like hurting myself,” and “I felt like killing myself.” Other measures included the Family Adaptability and Cohesion Evaluation Scales (Olson, Portner & Bell, 1982), and the Coddington Life Events Scale for Adolescents (Holmes & Rahe, 1967), which included questions on childhood parental loss through separation and divorce.

Over each of the three years, between 15% and 20% of the sample reported low suicidal ideation scores for the previous week, about 4% reported moderate scores, and
roughly 5% reported high scores. Garrison et al. (1991) found that females consistently reported significantly more suicidal thoughts than males.

Garrison et al. (1991) performed logistic regression analyses for both the cross-sectional and longitudinal data. Cross-sectional results showed that when race and gender were controlled, depression, family cohesion, family adaptability, and undesirable life events (including childhood parental loss) were significantly associated with a higher suicide score. However, when stepwise multivariate models were used which simultaneously considered race, gender and all variables that had been significant in the simple models, only depression remained significant for each of the three years. This finding indicates that the contribution from the other factors was explained by their influences on depression.

The longitudinal results were similar in several aspects to the cross-sectional findings. Significant cross-sectional predictors of suicidal ideation were also significant predictors of suicidal ideation the following year. Moreover, Year 1 and Year 2 depression scores were significant predictors of high suicidal ideation in Year 3. Unlike the cross-sectional results, however, female gender was also a significant predictor in both years of higher suicidal ideation in Year 3.

For Garrison et al. (1991), the most consistent predictor of both the cross-sectional and the longitudinal suicide scores was the depression score. As well, low levels of family cohesion and family adaptability, and high levels of undesirable life events, were significantly associated with high levels of suicidal ideation. Garrison et al. suggested that depression may be a direct factor for suicidal ideation, whereas family cohesion, family adaptability, and undesirable life events may be primarily indirect factors.
Overall, depression and family dysfunction are again demonstrated by Garrison et al. (1991) to be strong factors in suicidality. Further, the longitudinal style of research and results found by Garrison et al., taken in conjunction with findings by Rubenstein et al. (1989), suggest a structural model of risk factors for suicidality. This study will build such a model to investigate the relationships between these factors (i.e., family functioning, childhood parental loss, gender, depression, and suicidality). The suicidality measure for the current research will represent a comprehensive severity continuum in incorporating the more severe items used by Rubenstein et al. (1989), and the less severe items used by Garrison et al. (1991).

2.5.1 *A latent variable model of risk factors in non-clinical populations.* Research suggests that depression may be the only variable that directly influences suicidal behaviour (Garrison et al., 1991; Rubenstein et al., 1989). However, depression in turn is directly influenced by family cohesion, family adaptability, and loss of a parent through separation or divorce. Adopting a latent variable approach and drawing on research into suicidality in normal populations generates the structural model depicted in Figure 2.1. The terms in ovals represent the latent constructs that are modeled. The single headed arrows between constructs indicate that the construct at the start of each arrow is theorised to generate the construct at the other end.
Figure 2.1. A latent variable model of risk factors in suicidality based on research with normal populations.

Before continuing with the development of a structural model, it is important to consider how the various forms of suicidal behaviour (i.e., ideation, plans, threats, self-harm, and attempts) are best organized according to severity.

2.6 Research Using Continuum Models of Suicidality With Non-clinical Populations

Two studies on adolescent suicide used a continuum model of suicidality on non-clinical adolescent populations. One study surveyed 156 male and 151 female students, with a mean age of 15.8 years, in a metropolitan secondary school in South Australia (Pearce and Martin, 1994a). The researchers assessed suicidality using The Revised Adolescent Suicide Questionnaire (Pearce & Martin, 1994b), which they devised. This questionnaire assessed suicidal ideation, plans, threats, deliberate self-harm, and suicide attempts, the frequency of these behaviours in the previous six months, and the self-reported probability of each behaviour in the near future. Participants were also asked to
rate the detail of their suicide plans and the seriousness of their suicide threats.

This method yielded a score for each of several suicidal behaviours of increasing severity: none, suicidal ideation, suicide plans, suicidal threats, deliberate self-harm and suicide attempts (Pearce & Martin, 1994a). The composite index of suicidality had a possible range of scores between 0 and 15. One difficulty with this rating scheme was that a person who had only experienced suicidal ideation and then made a suicide attempt would obtain a total score of 6. By contrast, a person who did not attempt suicide, but who experienced suicidal ideation, made a plan, made suicidal threats and self-harmed, would receive a higher total score of 10.

Approximately 49% of both genders reported having thought about killing themselves, 13% had made suicidal threats, 14% reported making specific plans to suicide without carrying them out, 30% reported deliberately hurting themselves, and 9% reported trying to kill themselves. The percentage of participants who responded positively to deliberate self-harm is unexpectedly high. One must wonder if they understood the full intent of the question. Using chi-square analyses, Pearce and Martin (1994a) found highly significant associations between suicide attempts and, in order of decreasing importance, plans, deliberate self-harm, suicidal ideation, and threats. Results also indicated that “threats” posed less risk of attempt than “plans,” and should, therefore, be given a lower score.

The second study using a continuum model of suicidality with a normal population was conducted by Martin et al., (1995), who investigated a possible relationship between family functioning and a continuum of suicide risk. The sample comprised 201 male and 151 female students attending a large secondary school in Adelaide. The students in
Years 10 and 11 had mean ages of 14.8 years and 16.1 years, respectively.

Martin et al. (1995) used the 60-item McMaster Family Assessment Device (Epstein, Baldwin & Bishop, 1983) to measure various dimensions of family functioning. Other measures included the Beck Depression Inventory (Beck & Steer, 1987) and The Revised Adolescent Suicide Questionnaire (Pearce & Martin, 1994b). The questions on suicidality were: “I think about killing myself,” “I deliberately try to hurt myself,” “I have made specific plans to suicide without carrying them out,” “I have made one suicide attempt,” and “I have made several suicide attempts.” These questions referred to the previous 6 months.

No significant gender, school year, or age differences were found for depression, and no school year or age differences were found for suicidal risk. Almost 9% of females and males stated that they had deliberately self-harmed. The one gender difference found for suicidal risk was that suicide plans were made by significantly more females (9.9%) than males (3.5%). Depression was positively associated with all levels of suicidal behaviour. Furthermore, Martin et al., (1995) found that depressed students had higher (more dysfunctional) scores on all FAD subscales of family functioning except for behaviour control.

Family dysfunction was also associated with suicide risk. All FAD subscale scores of ideators and attempters were significantly higher than for non-suicidal adolescents, indicating greater family dysfunction on each subscale (Martin et al., 1995). Likewise, deliberate self-harmers and planners also scored their families significantly higher than did non-suicidal students on most FAD subscales.

Martin et al. (1995) used stepwise regression analyses with their FAD subscales to
predict suicidal thoughts and behaviour. Results showed that family dysfunction did not contribute directly to suicidal thoughts or behaviours. Rather, family dysfunction contributed significantly to depression, and in turn, depression contributed significantly to suicidality. Parental loss by separation or divorce was associated with greater family dysfunction, but was not directly associated with either depression or suicidality. Martin et al. (1995) found no differences between the depression scores of adolescents whose parents were still married and adolescents whose parents were separated or divorced. While raising questions about the relationship between parental loss, depression, and suicidality, this research offers support for the model depicted in Figure 1.1, and suggests the development of the following model depicted in Figure 2.2. The double-headed arrows represent a simple association between constructs.

![Diagram](image)

*Figure 2.2.* A latent variable model depicting the relationship between family dysfunction, childhood parental loss, depression, and suicidality.

Age was not a significant factor in this study by Martin et al. (1995). However, age was a significant factor for suicidal behaviour in earlier studies which used younger children and adolescents (e.g., Husain & Vandiver, 1984). It may be that the years of significant change in suicidal behaviour span a period earlier than Years 10 and 11.
Therefore, this study will explore age differences between Years 9 and 10 students.

Whilst depression, family dysfunction, and childhood parental loss have been well researched as risk factors in adolescent suicidality, certain mood and personality factors have also been investigated. These factors include introversion, impulsivity, anger, and anxiety. Research findings for these mood and personality variables merit their consideration in a structural model of risk factors.

2.7 Personality Traits and Mood Factors as Risk Factors in Suicidality

Several studies comparing clinical with normal populations have found certain personality traits and mood factors (other than depression) to be associated with suicidal behaviour. However, it remains unclear whether the factors are associated with depression or with suicidality, and how the factors interrelate with each other and with family factors.

2.7.1 Personality traits as risk factors in suicidality. The identified personality traits are neuroticism, introversion, and impulsivity. In Denmark, Benjaminsen, Krarup, and Lauritsen (1990) compared 30 psychiatric patients who had attempted suicide with 30 healthy matched controls. All participants were aged between 18 and 29 years. Measures included the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1970) and the Lazare-Klerman-Armor Trait Scale (1966). A suicide attempt was defined as “a deliberate act of self-injury consciously aimed at self-destruction, regardless of intention of death or actual danger to life” (p. 389). Suicide attempters demonstrated significantly higher levels of both neuroticism and introversion than did controls. Further, while some studies have failed to find an association between suicide attempts and introversion
(Diekstra, Kienhorst, & de Wilde, 1995; Koller & Castanos, 1968; Pallis & Jenkins, 1977), others have reported suicide attempters as being both significantly more introverted (Colson, 1972) and significantly less introverted (Kreitman, 1977).

Kashden, Fremouw, Callahan, and Franzen (1993) compared 23 suicidal adolescents with 20 adolescent controls in the US. The mean age of the experimental participants was 15.1 years, and the mean age of the control group was 15.4 years. The Gordon Diagnostic System (Gordon, 1987), used to measure impulsivity, is comprised of both a delay task and a vigilance task. Other measures included the Suicide Behaviours Questionnaire (Lineham & Nielson, 1981) and the Beck Depression Inventory (Beck et al., 1961). Suicidal adolescents were significantly more impulsive than the control group on the vigilance task, but not on the delay task. This is surprising, as the vigilance task was one of focus and concentration, whereas the delay task required patience. One may have expected the suicidal adolescents to be significantly less patient if they were truly impulsive. On the other hand, it may be that either the delay task was too boring (as some participants reported) and participants lost interest, or that the sample size was too small to demonstrate a significant result. Suicidal adolescents also showed significantly higher levels of depression than controls.

2.7.2 Mood factors as risk factors in suicidality. The mood factors anger and anxiety have also been linked with suicidality. Kashani, Goddard, and Reid (1989) compared 30 children and adolescents in a US community sample who reported experiencing suicidal ideation with 180 controls of similar age. Children’s and parents’ self-reports showed that those individuals experiencing ideation were significantly more angry than those not experiencing ideation.
Also in the US, Goldston et al. (1996) compared 27 first time attempters, 32 repeat attempters, 40 previously suicidal adolescents, and 126 non-suicidal controls. All individuals were aged between 12 and 18 years. They completed both the State-Trait Anxiety Inventory (Kienhorst et al., 1987) and the Beck Depression Inventory (Beck & Steer, 1987). Repeat attempters and previous attempters reported significantly higher anxiety and depression than did non-suicidal participants. As well, previous attempters reported significantly more anger than did all other groups.

De Wilde, Kienhorst, Diekstra, and Wolters (1993) used a semi-structured interview to compare the psychological characteristics of three groups of adolescents in the Netherlands: 48 suicide attempters, 66 depressed adolescents who had not attempted suicide, and 43 normal controls. Attempters reported significantly higher anxiety than did controls, but attempters did not report significantly higher anxiety than did the depressed adolescents.

Stein, Apter, Ratzoni, Har-Even, and Avidan (1998) compared 32 hospitalized first suicide attempters, 19 multiple attempters, 109 non-suicidal psychiatric patients, and 85 community controls in Israel. The mean age of participants was 16.0 years. Measures included the Beck Depression Inventory (Beck & Steer, 1987), the State-Trait Anxiety Inventory (Kienhorst et al., 1987), the Multidimensional Anger Inventory (Siegel, 1986), and the Suicide Potential Scale (Pfeifer, 1985). Suicide attempters had significantly higher anxiety, depression, anger, and aggression than did the community controls. As with the previous studies, no modeling was performed to determine the relationships between measures.
Several studies have explored both mood and personality factors together as risk factors. Kingsbury, Hawton, Steinhardt, and James (1999) used an English sample comprised of 45 adolescents who had self-poisoned and 30 Year-10 adolescents from a community sample. The mean age of the experimental participants was 16.1 years, and the mean age of the control group was 15.9 years. Measures included the Beck Depression Inventory (Beck & Steer, 1987), the Spielberger State-Trait Anger Inventory (1988), and the Plutchik Impulsivity Scale (Plutchik & van Praag, 1989).

Adolescents who had self-poisoned showed significantly higher depression, trait anger, and impulsivity than did controls, both at the initial testing and at the 6-week follow-up testing (Kingsbury et al., 1999). However, when levels of depression were controlled, only impulsivity at time 2 remained significant. Because of the small sample size, results must be viewed with caution. However, results suggest that depression may be the only consistently direct factor for suicidal and mediates the contributions from other psychological factors. Impulsivity may directly influence suicidal behaviour, but the link appears less consistent.

In New Zealand, Beutrais, Joyce, and Mulder (1999) compared 129 individuals aged below 25 years, who made medically serious suicide attempts, with 153 randomly selected community controls. Measures included the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1970), the Barratt Impulsivity Scale (Barratt, 1985), the Beck Hopelessness Scale (Beck, 1987), and a personal interview. Bivariate results showed that suicidal individuals had significantly lower levels of parental care, and significantly higher levels of parental protection, childhood loss by parental separation, poor parental relationship, introversion, impulsivity, neuroticism, hopelessness, anxiety disorder, and
major depression than did controls.

When multivariate analyses were performed using a logistic regression model to take account of intercorrelations, only hopelessness, neuroticism, anxiety disorder, and major depression remained significant (Beautrais et al., 1999). However, the associations between introversion, impulsivity, and neuroticism were highly intercorrelated. Had these measures overlapped less, introversion and impulsivity may have produced significant results. For example, the Eysenck Extroversion Scale included questions on reflectiveness, anxiety, sense of daring, and excitability, which may overlap impulsivity. Likewise, the items on anxiety may overlap neuroticism.

Koslowsky et al. (1992) used a structural equation modeling approach to investigate the relationships between impulsivity, violence, anger, depression, and suicide risk. Ninety-four male soldiers in the Israeli army aged under 22 years and complaining of mental distress were given the Symptom Check List Depression Scale (Derogatis, 1979), self-devised measures of impulsivity and suicide risk developed by Plutchik and van Praag (1986), and an anger arousal measure developed by Siegal (1986).

Participants were divided into three groups: (1) an ideation group, who had considered but not attempted suicide ($N = 43$); (2) a prior-attempt group, who had attempted suicide in the past week ($N = 18$); and (3) a control group, who had neither considered nor attempted suicide ($N = 28$). Participants were considered representative of the population, as all Israeli males complete time in the citizens’ army. It may be argued, however, that anyone in the Israeli army at the time would experience abnormal stressors. Therefore, it would be inappropriate to directly apply results of the Koslowsky et al. (1992) study to normal adolescent populations in Australia.
Using structural equation modeling, Koslowsky et al. (1992) found that suicide risk was the final stage in a series of hypothesised links. In the best-fitting model, impulsivity was a precursor of anger and violence, anger was a precursor of depression, and depression was a precursor of suicide risk. These links were all significant. Anger did not directly influence suicide risk, but exerted an indirect influence via depression. Koslowsky et al. did not test impulsivity as a direct precursor of either depression or suicide risk, so it is unknown whether impulsivity directly influenced suicide risk, or was an indirect factor mediated by depression.

The results from Koslowsky et al. (1992) support an indirect link between anger and suicidality, via depression. They also support an indirect link between impulsivity and suicidality via anger and depression. Directional relationships of a similar nature between mood and personality factors, depression, and suicidality will be further investigated in this research.

It appears that the personality traits of neuroticism, introversion, and impulsivity, and the mood factors of anger and anxiety, may significantly contribute to suicidality in adolescents, although it remains unclear whether contributions are of a direct or indirect nature. Further, research suggests that there may be overlap between neuroticism, introversion and impulsivity (Beautrais et al., 1999). It is not surprising that neuroticism correlates highly with other measures since neuroticism is itself a personality predisposition to feel a range of negative affect states (including anxiety, anger, depression) that may arise from personality characteristics such as introversion and impulsivity. Neuroticism is, therefore, a multidimensional and complex factor to measure. Due to possible confounds with overlapping constructs, this study will not
focus on neuroticism. Instead, this study will investigate the more specific and unidimensional factors of anxiety, anger, introversion, and impulsivity.

2.8 Two Models of Risk Factors for Personality Traits, Mood Factors, and Suicidality

Since studies are unclear regarding the relationships between introversion, impulsivity, anger, and anxiety with depression, how these factors may relate to depression and suicidality is unknown. It may be that these factors relate to suicidality in the same way as family dysfunction. Specifically, introversion, impulsivity, anger, and anxiety may contribute only to depression, which in turn contributes directly to suicidality. Some research (Beautrais et al., 1999; Kingsbury, et al., 1999; Koslowsky et al., 1992) supports an indirect model, as shown in Figure 2.3.

![Diagram of a latent variable model of indirect effects from Introversion, Impulsivity, Anxiety, and Anger upon Suicidality via Depression.]

Figure 2.3. A latent variable model of indirect effects from Introversion, Impulsivity, Anxiety, and Anger upon Suicidality via Depression.

Alternatively, it may be that these mood and personality factors, like depression, contribute directly to suicidality as indicated by other research (e.g., Benjaminsen et al., 1990; De Wilde et al., 1993; Goldston et al., 1996; Kashani et al., 1989; Kashden et al.,
This alternative model is shown in Figure 2.4.

Figure 2.4. A latent variable model of direct effects from Introversion, Impulsivity, Anxiety, Anger, and Depression upon Suicidality.

This study will evaluate each model through structural equation modeling. The analyses will identify which model best fits the data for the constructs of interest.

2.9 Location Differences

Much research has investigated urban-rural differences for depression, a precursor to suicidal behaviour. "Rural" locations can be further distinguished as regional (outside a capital city and population greater than 100,000) or rural (population between 10,000 and 100,000). Less research has explored regional-rural differences for depression, and none known to this author investigates regional-rural differences with adolescents.

Paykel, Abbott, Jenkins, Brugha, and Meltzer (2003) analysed the data from 10,000 participants in the British National Morbidity Survey for location differences. Participants were aged between 16 and 64 years and were assessed using the Revised Clinical Interview Schedule (CIS-R; Lewis, Pelosi, Araya, & Dunn, 1992). Paykel et al.
found significantly higher rates of psychiatric morbidity, which included depression and anxiety, in urban areas compared with rural areas. The regional group lay in between, but no significant regional-rural difference was found. Urban participants were significantly younger and of a lower social class than rural participants, with regional participants intermediate, suggesting that age or class may have explained morbidity differences rather than locality.

Diala and Muntaner (2003) analysed the data from 8000 participants in the US National Co-morbidity Survey for location differences. Participants were aged between 15 and 54 years, and were assessed using the Composite International Diagnostic Interview (CIDI; World Health Organisation, 1990). Results found that men living in regional areas reported significantly more depression than did men living in rural areas. Diala and Muntaner concluded, however, that the main contributing factor to greater depression was poverty and not locality.

The lack of knowledge on regional-rural differences in adolescent depression merits its exploration. One consideration apparent from broader studies is the potential confound of economic status. A further aim of this study, then, is to assess regional-rural differences of risk factors in adolescent depression and suicidal behaviour whilst controlling for socioeconomic status.

**Summary**

Research demonstrates similar risk factors for adolescent suicidality in non-clinical samples as in clinical samples. Findings confirm depression as a major factor in for non-clinical as well as for clinical populations (Martin et al., 1995; Rubenstein et al., 1989).
Moreover, depression may be the only factor which directly influences adolescent suicidality in non-clinical populations.

Family dysfunction is another important factor for both clinical and non-clinical samples of adolescents, but non-clinical population studies indicate that family dysfunction has only an indirect relationship with suicidality through its effect on adolescent depression (Martin et al., 1995; Rubenstein et al., 1989). Family dysfunction includes lack of family cohesion and adaptability, disharmony, conflict that arises through separation and divorce, and inappropriate expressions of emotion.

Age is a significant factor for adolescent suicide in clinical but not non-clinical samples. However, the most likely reason is because each of these non-clinical studies used a fairly restricted age range. By contrast, gender and childhood parental loss through separation and divorce may be factors for both clinical and non-clinical population samples (Garrison et al., 1991; Martin et al., 1995), although their impact is less clear in non-clinical studies than in clinical studies.

Gender has uncertain status as a risk factor for suicidality. Whereas the results of Garrison et al. (1991) and Pronovost et al. (1990) suggest that females experience a higher incidence of suicidal ideation than do males, Pearce and Martin (1994a) and Martin et al. (1995) found no gender differences for suicidal ideation. Martin et al. did find that females made more plans than males, whereas Pearce and Martin found no gender differences for plans. Martin et al., Rubenstein et al. (1989) and Pearce and Martin found no significant gender differences for suicide attempts. Similarly, no gender differences were found for either self-harming behaviour or threats.

The reasons for these differences are unclear. Certainly, the students in the
Garrison et al. (1991) study were younger than those in the other studies, but similar findings resulted for the students in the Pronovost et al. (1990) study who were not younger. This research will, therefore, further investigate gender as a factor.

Childhood parental loss through separation and divorce also appears to be associated with adolescent suicidality, although the nature of this association is unclear. Pronovost et al. (1990) found that childhood parental loss by separation and divorce was significantly associated with adolescent suicidality. By contrast, Martin et al. (1995) found that loss was associated with family dysfunction, but was not directly associated with either depression or suicidality. Further, Garrison et al. (1991) and Rubenstein et al. (1989) found loss to be associated with suicidality as a factor in undesirable life events. Garrison et al., who conducted the only longitudinal study, and Beautrais et al. (1999), who used a complex model of risk factors, both found that loss indirectly influences suicidality, through having a direct association with depression, which in turn directly influences suicidality.

Some differences in findings may have resulted because Martin et al. (1995) and Pearce and Martin (1994a) conducted Australian studies and used a continuum approach for measuring suicidal behaviour. By contrast, Pronovost et al. (1990) used a Quebec sample and did not use a continuum of measurement for suicidal behaviour. Also, inconsistencies between study findings may result from differences in the study samples and time frames of the questions asked. The students in the study by Garrison et al. (1991) were at least two years younger than the students in the other studies, whereas the students used by Beautrais et al. (1999) were considerably older. The students used by Pearce and Martin were all from a particularly homogeneous middle-class community.
Rubenstein et al. and Pronovost et al. asked open questions regarding suicidal behaviour; Garrison et al. limited their time frame to 1 week; and Martin et al. and Pearce and Martin had a 6-month time frame.

The personality traits of introversion and impulsivity, and the mood factors of anger and anxiety, may also be risk factors for adolescent suicidality. However, their associations with depression and other risk factors are unclear.

It may be concluded that depression, family dysfunction (expressed as cohesion and adaptability), and childhood parental loss through separation and divorce are major factors involved in adolescent suicidality, both in clinical and non-clinical population samples. Further, it seems that family dysfunction and loss are indirect factors, mediated through their impact on depression. For simplicity, from now on the term “childhood parental loss” will be used instead of “childhood parental loss through separation and divorce.” Therefore, when “childhood parental loss” is used, it will always imply childhood parental loss through separation and divorce, unless otherwise specified.

Before considering family dysfunction and childhood parental loss in more depth, it is necessary to consider the theoretical implications of depression and attachment theory in relation to adolescence, family functioning, and adolescent suicidality in particular. Therefore, theories of depression, and particularly attachment theory, will be addressed in the next chapter.
Chapter 3: Depression, Attachment, and Research

Overview

3.1 Definition

Depression is an emotional state marked by feelings of intense sadness, apprehension, and worthlessness. The criteria for a major depressive episode set out in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994) includes recurrent thoughts of death or suicidal ideation, having a specific plan for committing suicide, or a suicide attempt. Suicidal behaviour is itself a defining feature of depression. It is not surprising, then, that studies report an association between depression and suicide. Although a few studies reviewed in this research project assessed clinically diagnosed depression, most of the studies used self-reported mood measures. This research will also use self-reported measures.

3.2 Adolescents and Depression

In Australia, up to 40% of adolescents have been found to suffer from self-reported depressed mood in any given 6-month period. Similarly, in the USA, Petersen, Compas, Brooks-Gunn, Stemmler, and Grant (1993) found estimates of depressed mood ranging from 20 - 35% in adolescent boys and 25 - 40% in adolescent girls over a 6-month period. The most common symptoms associated with adolescent depression include sad or irritable mood, hopelessness, anxiety, a sense of social isolation, and negatively distorted perception (Carlson & Kashani, 1988; Kashani, Reid, & Rosenberg, 1989; Kazdin, 1989; Kovacs, 1989). Further, the quality of family functioning, age, and loss
appear to affect these levels of depression (Zill and Schoenborn, 1990).

Theories of Depression

3.3 Early Psychoanalytic Theory

One of the earliest theories of depression was psychoanalytic theory, which originated with Freud (1917). Freud contended that persons prone to depression experience unresolved conflicts with their caregivers early in infancy or childhood. For example, when a child experiences neglect, she or he fails to feel valued, is unable to develop a sense of self-worth, and continues to seek a sense of security from others. Alternatively, when a child is overprotected by a parent, she or he similarly fails to develop a sense of self-worth by being taught to rely only on another person, namely the parent. For Freud (1917), then, depression is the result of overly dependent individuals turning their anger inward against themselves when they experience the sense of physical or emotional loss of someone close to them. This results in a process of self-abuse, self-blame, and depression.

3.4 Modern Theories of Depression

Four modern theories of depression (i.e., cognitive, interpersonal, psychoanalytic, and object relations) have supported the early suppositions of Freud (1917) that depression is precipitated by stressful life events, that these events often involve parental loss, and that dependent individuals are more likely to develop depression following a loss. These four theories all converge upon two major types of depression, anaclitic and introjective.
3.4.1 Convergence of modern theories of depression. The definition of depression as set out in DSM-IV is based on a symptomatic approach to depression. Numerous attempts have been made to differentiate types of depression based on identified symptoms, but most have been unsuccessful. By contrast, and over the previous two decades, clinical investigators from four different theoretical perspectives have differentiated types of depression on the basis of the life experiences that trigger depression (Blatt & Maroudas, 1992). Although the four theories use different terms and involve different assumptions about the etiology of depression, all converge on two major types of depression (i.e., anaclitic and introjective) and focus at some level on the role of early childhood experiences.

The first type of depression develops from disruptions in interpersonal relationships (e.g., object loss), and the second type of depression develops from disruptions in an effective and essentially positive sense of self (Blatt & Maroudas, 1992). This chapter will outline how these two types of depression are classified by the four modern theorists. It will then demonstrate how each modern theory relates depression to early childhood experience, encompassing Beck’s cognitive theory (1967), Arieti and Bemporad’s interpersonal theory (1978), Blatt’s psychodynamic theory (1990), and Bowlby’s object relations theory (1988).

3.4.2 The two types of depression. Assuming a psychoanalytic perspective, Blatt, D’Afflitti, and Quinlan (1976) identified interpersonally-based depression as anaclitic. Blatt et al. described anaclitic depression as characterised by feelings of loneliness, helplessness, and weakness. The individual experiences fears of abandonment, neglect, and vulnerability. From an ethological and object relations perspective, Bowlby (1977)
identified such individuals as anxiously-attached. Bowlby contended that anxiously-attached individuals seek interpersonal contact and are greatly dependent on others. From an interpersonal perspective, Arieti and Bemporad (1978) identified a dominant-other type of depression. The individual desires to be passively gratified by a strong other person and reacts to a sudden withdrawal of love and approval by developing a dependent relationship with the other. Depression results when the other is lost. Beck (1983), who moved from a psychoanalytic perspective into a cognitive-behavioural approach, identified sociotropic individuals as those who invest heavily in interpersonal relationships and are concerned about disapproval by others. Therefore, they act in ways that seek approval and secure attachments. Depression for these people usually occurs in response to perceived loss or rejection in social relationships. In each theory, an individual with anaclitic depression is a dependent individual seeking both a sense of safety and self-worth from another.

By contrast to this first type of depression, Blatt, D’Afflitti, and Quinlan (1976) identified the second type of depression as introjective. Introjective depression is characterised by self-criticism and feelings of unworthiness, inferiority, failure, and guilt. These individuals engage in constant self-scrutiny, and have a fear of losing approval from significant others. They strive for excessive achievement, have high expectations of themselves and others, and often achieve a great deal, but with little lasting satisfaction. Bowlby (1977) identified such individuals as compulsively self-reliant. Bowlby suggested that their avoidant behaviour may be a defense against re-experiencing early childhood frustration in caring relationships. Arieti and Bemporad (1978) identified a dominant-goal type of depression. An individual reacts to the sudden
withdrawal of love or approval by attempting to regain approval by directing their entire effort toward a dominant goal that becomes an end in itself. Depression results when the dominant goal is not achieved. Beck (1983) further identified an autonomous type of depression. Autonomous persons invest excessively in their independence, personal rights, and in attaining meaningful goals. Depression for these people usually develops in response to perceived achievement failure or lack of control over their environment. In each theory, an individual with introjective depression is independent, self-reliant, and seeks a sense of self-worth through an external goal.

These four theories of depression clarify issues and bridge gaps between various modern theories. A shared feature between the four theories is that each traces the onset of depression back to the family relationships and parenting experienced in the early years of life.

3.4.3 Cognitive theory. Beck's (1967, 1983) cognitive theory of depression treats thoughts and beliefs as major determinants of emotions. According to Beck, the thinking of depressed people is biased towards negative interpretations of events, or schemas. Negative schemas result from negative experiences, particularly in childhood, which include parental loss, rejection, excessive criticism, or tragedy. When children's experiences are mainly unhappy, they develop negative beliefs about their world and about themselves. Beck contends that these negative beliefs are re-activated whenever new situations arise that in some way resemble their previous experiences. The negative beliefs introduce certain cognitive biases which encourage these individuals to misperceive reality; they may expect to fail, blame themselves, or feel worthless even when the objective situation points to other interpretations. Expecting only failure, they
become depressed.

Unlike psychoanalytic theory, Beck (1983) focuses on current life issues. Beck concludes that the cognitive distortions associated with anaclitic depression centre around the irreversibility of loss and a sense of social undesirability. By contrast, for introjective depression, Beck concludes that cognitive distortions centre around themes of defeat and failure due to personal incompetence. Beck also contends that individuals can alternate between the two types of depression, depending on specific life experiences at any particular time.

3.4.4 Interpersonal theory. Arieti and Bemporad (1978, 1980) emphasise the role of early interpersonal relationships in personality development and in the vulnerability to depression. They view depression as unresolved sadness. They suggest depressive vulnerability is established when a mother, having provided appropriate nurture and affection to her infant in the first year of life, suddenly alters the child’s sense of security as it strives for independence by giving only conditional care and attention. As with cognitive theory, Arieti and Bemporad contend that this sudden change of security base leads the child to develop maladaptive cognitive processes. The child either fears losing the mother’s love and conforms to maintain her love (anaclitic type) or, if the mother rewards particular achievements, the child learns to rely on attaining particular goals to maintain self-esteem and a sense of feeling loved and valued (introjective type). In later life, when such individuals either experience the loss of a primary relationship or fail to attain a significant goal, respectively, their cognitive processes are unable to successfully integrate these negative life experiences, and depression may result.

3.4.5 Psychoanalytic and cognitive-developmental theory. For Blatt (1990),
personality development is viewed as the consequence of the interaction of two basic developmental tasks: (1) the establishment of the capacity to form stable, enduring, mutually satisfying interpersonal relationships, and (2) the achievement of a differentiated, consolidated, stable and essentially positive identity (Blatt & Shichman, 1983). Blatt, like Arieti and Bemporad (1980), proposes that distorted early relationships lead to rigid and fixed types of relatedness and concepts of the self, and create vulnerabilities to subsequent depression. Blatt (1974, 1990) contends that anaclitic depression results from a disruption in developing satisfying interpersonal relationships which leads to a fear of abandonment and a failure to develop a sense of self. Blatt postulates that children who experience deprivation, inconsistent, or overindulgent parenting, are vulnerable to anaclitic depression. Introjective depression is said to result from a disrupted development of positive identity which may lead to a neglected development of interpersonal relationships. Blatt postulates that children who receive controlling, intrusive, overly critical, and/or punitive parenting are vulnerable to introjective depression.

Further, Blatt (1990) suggests that an individual’s primary personality configuration (i.e., anaclitic or introjective type) is determined by several factors, and most importantly by the relationship with primary caregivers (Blatt & Maroudas, 1992). Unlike Beck (1983), Blatt contends that individuals do not alternate between the two configurations depending on particular life events. Rather, individuals of the two configurations seek different types of experiences, and may even experience the same event differently (Blatt & Zuroff, 1992).

Blatt (1990), like Arieti and Bemporad (1978, 1980), stresses the importance of
impaired cognitive structures in depression. The parent-child caring relationship is viewed as leading to the formation of both adaptive and maladaptive internal working mental models or representations of caregiving relationships. These representations express the quality of the attachments.

3.4.6 *Ethological and object relations theory.* Bowlby (1969, 1988), influenced by ethological and object relations theory, contends that vulnerability to depression is created in very early childhood when a child is not securely bonded to his or her primary caregiver, usually the mother. For Bowlby, the nature of these early emotional bonds determines the nature of subsequent personality development and interpersonal relations. Like Beck (1983), Bowlby suggests that cognitive patterns develop early in childhood based on these initial caregiving experiences, and contribute significantly to the way individuals experience and interpret their interpersonal environment. When children experience insecure bonding, they fail to develop successful methods for dealing with life stressors and negative emotions such as anxiety. This, in turn, may result in depression as the individual matures.

For Bowlby (1980), like Arieti and Bemporad (1978, 1980), depression is a reaction to sadness that a person feels unable to change. Such a sadness is usually the result of experiencing a loss "of a loved person or else of familiar and loved places, or of social roles" (p. 245). Bowlby, however, proposes three types of childhood experiences that create specific cognitive biases that increase the vulnerability to depression. First, some children never succeed in gaining a stable and secure relationship with parental figures despite repeated efforts to meet their parents' demands. These children are especially vulnerable to anaclitic depression. Second, are those children who experience
the actual loss of a parent in early childhood. These children are also more vulnerable to anaclitic depression. Third, are those children who are made to feel incompetent and unlovable. They come to expect all relationships to be rejecting and hostile, and remain alone and independent of affectional ties. These children are especially vulnerable to introjective depression.

3.5 Summary of Modern Theory

Four modern theories of depression (i.e., cognitive, interpersonal, psychoanalytic, and object relations) focus on the role of early childhood experiences and, in particular, the style of parenting experienced by the child. For Beck (1967), negative life events in childhood result in negative schemas and depressive vulnerability. For Arieti and Bemporad (1978, 1980), a vulnerability to depression develops in childhood when the primary caregiver offers care and attention only conditionally, leading to maladaptive cognitive processes.

Blatt (1990) suggests that distorted early relationships lead to rigid and fixed types of relatedness and concepts of the self, and create vulnerabilities to subsequent depression. Finally, Bowlby (1969, 1988) contends that vulnerability to depression is created in very early childhood when a child is not securely bonded to his or her primary caregiver, usually the mother. Insecure bonding prevents the development of successful methods for dealing with life stressors and negative emotions such as anxiety. Within each theoretical framework, anaclitic depression develops from a breakdown in interpersonal relationships, whereas introjective depression develops from a breakdown in self-identity or self-esteem.
Two themes in depression theories have converged in recent years. First, there has been an increasing agreement by all four theorists that depression results from both affective and cognitive factors. Second, all theorists acknowledge that therapy should involve some combination of cognitive re-structuring and attention to the early years of life.

The focus on the role of early childhood experiences in the development of depression has led to a renaissance in another perspective on depression, Bowlby's (1969, 1988) attachment theory. Attachment theory is particularly relevant to research into depression because of its focus on the parent-child relationship in the early years of a child's development, and the consequences of the developed bond. Attachment theory demonstrates a highly explicit link between the parental relationship with the child and adolescent levels of both depression and suicidality.

**Attachment Theory**

In 1944, Bowlby formed the view that the disruption of the early mother-child relationship was a key precursor of mental disorder (Bowlby, 1944). He later stated that the essential factor for mental health is the experience in infancy and childhood of "... a warm, intimate, and continuous relationship with one's mother (or permanent mother-substitute) in which both find satisfaction and enjoyment" (Bowlby, 1969, pp. xi-xii).

Bowlby (1969) referred to this essential relationship as attachment, defining it more formally as a sense of safety and security due to the presence of, and sense of protection derived from, a primary caregiver. Attachment behaviour is any behaviour by an infant or young child designed to maintain its proximity to a caretaker, usually the
mother. When that other person is present, loving and dependable, the infant or child feels safe. When the other person is absent either psychologically or emotionally, or proves unreliable, anxiety arises. Bowlby (1980) contended that a dynamic equilibrium is created between the mother and child, and that any major disruption to this bond between the ages of 6 months and 4 years produces detrimental long-term effects on the child. These effects may include anger, hostility, depression, and suicidal behaviour.

The most popular explanation for attachment behaviour evolved out of psychodynamic theory, and was the theory of secondary drive (Holmes, 1993). The theory of secondary drive states that a preference to be with the other members of the species is a result of being fed by them (Dollard & Miller, 1950; Freud, 1940). However, Klein (1986) disagreed, arguing from object relations theory that the infant’s attachment to the mother was not only physiologically based, but was also psychologically based. More recently, Fonagy (2001) noted that children with insecure attachments cannot inhibit negative arousal or express their negative reactivity. If emotional and physical care are not given to the infant, and the caregiver cannot communicate to the infant that intolerable affect can be contained and controlled, the infant fails to internalize a sense of psychic safety and control, and an insecure attachment is formed.

For Bowlby (1969), himself a student of Klein, both secondary drive and object relations views of attachment failed to acknowledge that the attachment between infant and mother was, in fact, a psychological bond in its own right (Holmes, 1993). Bowlby argued his position that attachment behaviours were behaviourally based from the results of studies in ethology. For example, Lorenz (1935) demonstrated that ducklings and goslings imprinted without receiving food or any other conventional reward from their
caregivers. Likewise, Harlow and Zimmerman (1959) found that rhesus monkey infants removed from their natural mothers bonded with cloth models even though their food came from wire models. Bowlby contended that protection from predators was a more plausible explanation for attachment behaviour.

Bowlby (1969) further contended that the nature of attachment serves as the child's working model of the world. Whether an infant bonds securely with a mother figure determines its ability to bond to others later in life, and to experience security, autonomy, self-worth, and trust. Bowlby concluded that any failure of a mother to bond securely with her infant, termed maternal deprivation, could prevent the child from developing successful methods for dealing with life stressors and negative emotions such as anxiety. This in turn could result in depression as the child matured.

Bowlby (1969) suggested that mother-child interactions differ depending on the behaviour of both mother and child, and that both the baby's and mother's personality types influence the type of attachment behaviour and bonding that develops. For example, Moss (1967) found that more responsive mothers had babies who developed differently than less responsive mothers. Parenting styles and personality, then, appear to interact.

Bowlby's (1969) work was ground-breaking in his use of diverse material to argue for the importance of infant bonding. Nevertheless, his emphasis on the monotropic and maternal nature of attachment has been much challenged (Rutter, 1972). Schaffer and Emerson (1964) found that a sole principal attachment of 18-month-old infants to the mother occurred in only 50% of cases. In another 33% of cases, primary attachment was to the father, and in 17% of cases, primary attachment was to other people. Glueck and
Glueck (1962) and Gregory (1965) demonstrated that affection and discipline from both mothers and fathers were important for healthy emotional development. Attachment, then, appears to be neither specifically maternal nor monotropic.

As previously mentioned, later research has supplanted maternal deprivation with either prolonged family discord or lack of parental affection as risk factors for pathology (Rutter, 1971). For instance, perceived family dysfunction has been significantly associated with adolescent suicidal behaviour (Garrison et al., 1991; Kosky, Silburn, et al., 1990; & Rubenstein et al., 1989). Similarly, much research has found that perceived family dysfunction or lack of parental affection are significantly associated with self-reported depression in both adolescent and adult populations (e.g., Burbach, Kashani, & Rosenberg, 1989; Martin et al., 1995; Martin & Waite, 1994; Parker et al., 1995).

3.6 Summary of Attachment Theory

Bowlby (1950, 1969) contended that depression is a result of mother and child not forming an initial warm and continuous attachment relationship. Not only does this attachment offer a sense of safety and security to the young child, but this bond also provides the child with a working model of the world. Through this initial relationship, the child learns to regulate his or her emotions. When the mother fails to bond securely with the child, the child lacks a sense of safety and security and is at risk of depression in later life. Developing out of attachment theory, research has distinguished different patterns of attachment behaviour. These patterns are considered to reflect the type of relationship between caregiver and child.
3.7 Attachment Patterns

3.7.1 Development of attachment behaviour into different patterns. Ainsworth, Blehar, Waters, and Wall (1978) identified three individual attachment patterns in their research using the Strange Situation: secure, avoidant and ambivalent patterns. In the Strange Situation, a toddler was left in a room with its mother and some toys. While the toddler was crawling about the room exploring, a stranger would enter. The toddler’s behaviour was then carefully observed, along with four dimensions of the mother’s behaviour towards her child: sensitivity-insensitivity, acceptance-rejection, cooperation-interference, and accessibility-ignoring (Parker, Tupling & Brown, 1979).

Ainsworth et al. (1978) identified children as securely attached when they appeared confident of their mother’s response, moved towards her quickly in the face of environmental threat, and returned to their play and exploratory behaviour when the threat had passed and the stranger had left the room. Insecurely attached infants were those who appeared uncertain of their mother’s response, presumably because of past experiences with her. These infants adopted secondary behavioural strategies to maintain proximity to their mothers as best they could. Two insecure patterns were noted. The authors identified infants as avoidant when they shifted their attention away from their presumably rejecting caretakers and minimised the amount of distress that they displayed. By contrast, the authors identified infants as ambivalent when they were highly focused on their caregiver and maximised their signals of distress through insistent, often hostile, demands for care and attention. When comfort was offered, however, the ambivalently attached infants often rejected the care and remained comforted.
More recently, a fourth attachment pattern has been described by Main and Solomon (1986). These infants show a variety of inconsistent behaviours during the reunion phase of the Strange Situation, demonstrating a random mixture of the other three attachment patterns. This group has been classified as disorganised-disoriented. Since few categorisations are pure, this fourth category filled a needed gap in attachment theory. As will be discussed later, children classified as disorganised often experience the highest levels of depression in later life (Allen et al., 1996; Toth & Cicchetti, 1996).

3.7.2 Attachment patterns and parenting styles. In further work, Main and Goldwyn (1985) have linked childhood attachment patterns with parenting styles. Main and Goldwyn used the Adult Attachment Interview (George, Kaplan, & Main, 1985) retrospectively with adults to identify different attachment patterns. An individual’s narrative account of childhood and attachment history was linked with their own perceived behaviour as a parent. Main and Goldwyn used parents of children who had been assessed 6 years earlier as their initial subjects in the Strange Situation. Although the authors did not account for the influence of different personality factors of both parent and child, results indicated that clear, coherent stories of childhood by parents correlated with securely attached children. However, narrative incompetence, seen in an inability to tell any sort of story, or in telling a confused and incoherent story, correlated with insecure attachment of the child.

Further, the three attachment patterns identified by Main and Goldwyn (1985) paralleled the attachment behaviours classified by Ainsworth et al. (1978). Parents of children who had been classified as securely attached 6 years previously valued attachment relationships. As parents, they valued objectivity, consistency and flexibility.
This attachment pattern was named by Main and Goldwyn as “Secure” and parallels the secure attachment pattern of Ainsworth et al.

Parents whose children had experienced an avoidant attachment either discounted the importance of attachment for their children or dismissed the depth of influence that lack of attachment had on themselves. These adults recalled mainly rejection and lack of affection from attachment figures. This attachment pattern was named “Dismissing” by Main and Goldwyn (1985) and parallels the avoidant pattern of Ainsworth et al. (1978).

Finally, parents with children classified as having an ambivalent attachment were able to remember much of their childhood, but appeared to have difficulty integrating their experiences into a cohesive model. They seemed especially confused by the negative aspects of their relationships with their parents, and lacked the objectivity to move beyond this preoccupation. This pattern was identified by Main and Goldwyn (1985) as “Preoccupied” and parallels the ambivalent pattern of Ainsworth et al. (1978). This research by Main and Goldwyn demonstrates that how children and parents bond in the early months and years of life affects how they view those attachments in later years.

Rosenstein and Horowitz (1996) investigated attachment patterns in 32 male and 28 female adolescents admitted to a psychiatric hospital. They administered the Adult Attachment Interview (George et al., 1985), the Symptom Checklist-90-Revised (Derogatis, 1977), the Millon Clinical Multiaxial Inventory (Millon, 1983), the Structured Clinical Interview for Diagnosis - Patient version (Spitzer, Williams, & Gibbon, 1987), and a psychological test battery of objective and projective personality tests. Supporting the findings of Main and Goldwyn (1985), results demonstrated an 81% concordance between the mother’s and adolescent’s attachment patterns. This
strong link between the mother's and adolescent's attachment patterns supports the argument that one's early family experiences and the bonds that develop influence one's relationships in later life. Whether this is an emotional response to one's parenting experience, a learned behaviour, or genetic, it seems that the attachment pattern a child experiences with his or her parent tends to be the attachment pattern the individual forms as an adult with her or his own children (Rosenstein & Horowitz, 1996).

3.7.3 Attachment patterns and types of depression. The two insecure attachment patterns identified by Ainsworth et al. are represented in the models of depression developed by the four theorists reviewed earlier in this chapter. Research supports the theories, indicating that children who have experienced insecure attachment patterns are more vulnerable to depression in later years of life (Allen et al., 1996; Toth & Cicchetti, 1996).

Using a literature summary of published research, Lipsett and Mitnick (1991) found an association between insecure attachment patterns and the two types of depression, anaclitic and introjective. An ambivalent attachment pattern was associated with anaclitic depression, characterised by disruptions in interpersonal relationships (e.g., object loss). An avoidant attachment pattern was associated with introjective depression, characterised by disruptions in self-concept or identity. Blatt and Zuroff (1992) suggested that excessive preoccupation with either interpersonal relationships or self-concept can create a selective vulnerability to a particular series of stressful life events that can lead to depression. It seems that this vulnerability to depression may begin in the earliest attachment experiences. Based on the literature, then, these associations are illustrated in Table 3.1.
Table 3.1

*Associations Between Parenting Styles, Attachment Patterns, and Types of Depression*

<table>
<thead>
<tr>
<th>Parenting Style (Main &amp; Goldwyn, 1985)</th>
<th>Attachment Pattern (Ainsworth et al., 1978)</th>
<th>Type of Depression (Blatt &amp; Maroudas, 1992)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure</td>
<td>Secure</td>
<td>Normal grief/sadness</td>
</tr>
<tr>
<td>Preoccupied</td>
<td>Ambivalent</td>
<td>Anaclitic</td>
</tr>
<tr>
<td>Dismissing</td>
<td>Avoidant</td>
<td>Introjective</td>
</tr>
</tbody>
</table>

3.7.4 *Research on attachment patterns and mood.* Several studies have found that insecure attachment is a risk factor in the development of childhood and adolescent psychopathology (Allen et al., 1996; Toth & Cicchetti, 1996). Toth and Cicchetti compared 52 maltreated children with 40 non-maltreated children with a mean age of 9.5 years. The maltreated children showed significantly more depressive symptomatology than the non-maltreated children, and reported experiencing significantly more insecure attachment relationships than secure relationships. Those who reported an attachment pattern similar to Main and Solomon’s (1986) disorganised-disoriented attachment pattern exhibited the highest levels of depression.

Further, Allen et al. (1996) reported an 11-year follow-up study on 66 Year-9 students who had been placed in a psychiatric hospital and 76 age-matched controls. Allen et al. compared their pathology histories at age 14 with their attachment histories recorded at age 25 using the Adult Attachment Inventory (George, Kaplan, & Main, 1985). Significantly higher number of psychiatric participants reported experiencing all insecure attachment patterns (i.e., ambivalent, avoidant, disorganised) than did non-
psychiatric participants.

Sund and Wichstrom (2002) conducted a longitudinal nonclinical study of over 2000 students in Norway aged 12 - 14 years. Depressive symptoms were measured by the Mood and Feelings Questionnaire (Wood, Kroll, Moore, & Harrington, 1995), and attachment to parents and friends was measured by the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987). When severe depressive symptoms, gender, age, and stressful life events were controlled for, results demonstrated that a high degree of insecure attachment at Phase 1 predicted severe depressive symptoms at a 12-month follow-up testing.

In an Italian study, Calamari and Pini (2003) investigated the relationship between anger proneness and attachment styles in 162 females with a mean age of 17.5 years. The measures used included the State-Trait Anger Expression Inventory (Spielberger, 1988) and the Adult Attachment Questionnaire (Shaver & Hazan, 1992). Results demonstrated that insecure females scored significantly higher than did secure females on State Anger and on Anger/Inward. Further research is needed to determine whether these findings hold for males.

3.7.5 Attachment patterns and suicide. As his theory of attachment developed, Bowlby (1980) argued that children who experience a breakdown in the attachment bond are not only more vulnerable to depression in later years, but also to suicide. Bowlby contended that the break-down in the attachment bond may be due either to the death of a parent or to their loss through separation or divorce. He therefore suggested that the motives for a completed or attempted suicide are attachment-related. Bowlby's identified motives include: a wish to elicit a caregiving response from a neglectful
attachment figure, a wish to punish a neglectful attachment figure, a wish to destroy the self in order to assuage a sense of guilt, a feeling that life is not worth living without a continuing relationship with the caregiver, and a wish for reunion with a deceased caregiver.

By this time in the development of his theory, Bowlby (1980) also agreed with Rutter (1971) that an increased risk in suicidal behaviour was not necessarily due directly to the parental loss, but was a product of the interaction of adverse conditions following the loss. These adverse conditions included the breakup of the family home, frequent changes of caregiver, angry, anxious and often hostile relationships between the parents at this time, the effects of bereavement on the surviving parent, changes in family roles, and the arrival of a step-parent. All of these conditions impact directly on parenting and attachment relationships. Families in these situations experience increased stress and become more vulnerable to family dysfunction.

Further, Bowlby (1980) proposed that those individuals who have suffered experiences of loss in childhood are more likely as adults to show high degrees of anxiety, to develop over-dependent attachment and severe depressive symptomatology, and to express serious ideas of suicide. As discussed in Chapter 2 of this thesis, current research has shown that the death of a parent in childhood does not have the same effect on a child as separation and divorce. However, current research does support Bowlby’s theory that parental separation or divorce may increase one’s vulnerability to depression and suicidality in later life. Research has also investigated attachment patterns and suicidality.

3.7.6 Research on attachment patterns and suicide. In a retrospective study,
Adam, Sheldon-Keller, and West (1996) found a direct association between an ambivalent attachment pattern and suicidal behaviour. Adam et al. interviewed 59 female and 74 male Canadian adolescents with a mean age of 15.3 years. The measures used included the Adult Attachment Inventory (George, Kaplan, & Main, 1985), the Youth Self-report (Achenbach & Edelbrock, 1987), and the Suicidal Ideation and Behaviors protocol (Adam, 1973). All adolescents were clinical patients and were classified in two ways: (1) those individuals with a history of suicidal tendencies and ideation and those without, and (2) those with attachment-related trauma histories and those without. Adam et al. found that adolescents in the suicidality group reported significantly more ambivalent attachment patterns than did the other group. This study lacked a non-clinical control group and did not address the relationship between attachment and depression.

3.8 Summary of Attachment Patterns

Attachment behaviour is behaviour performed by an infant or young child to maintain proximity with an older caretaker, in order to feel safe and secure. Bowlby (1969) contended that this bond was psychological as well as physical, and that this bond becomes a child's working model of the world. If this initial parent-child bond is not warm and secure, a child is more likely to experience depression and suicidal behaviour later in life.

Ainsworth et al. (1978) identified one secure attachment pattern and two insecure attachment patterns in children, avoidant and ambivalent. Main and Solomon (1986) identified a third insecure attachment pattern, disorganised-disoriented, which occurs
when infants demonstrate a random mixture of the other three patterns. Further, these childhood attachment patterns have been linked with particular parenting styles (Main & Goldwyn, 1985). Securely attached children are associated with parents who value attachment relationships. By contrast, insecurely attached children are associated with parents who devalue the importance of attachment for their children or themselves, recalling mainly rejection and criticism from their parents (avoidant), or being simply confused by the negative aspects of their relationship (ambivalent).

Children who have experienced insecure attachment patterns appear to be more vulnerable to depression and suicide attempts in later years of life (Allen et al., 1996; Lipsett & Mitnick, 1991; Toth & Cicchetti, 1996). Parenting characteristics that foster insecure attachment include maternal rejection and lack of affection (Main & Goldwyn, 1985), and parental exercise of strong authority, criticism, and lack of care and support (Blatt & Zuroff, 1992).

The next chapter reviews these types of parental characteristics in relation to depression and suicidality. Development of a psychometrically sound instrument to assess parenting characteristics has helped to advance research and knowledge about adolescent suicidality.
Chapter 4: Parental Bonding Instrument, Assessment and Research

4.1 Overview

Depression represents a major risk factor for adolescent suicidality (Martin et al., 1995; Rubenstein et al., 1989). In turn, family dysfunction, childhood parental loss, and female gender are risk factors for adolescent depression (Garrison et al., 1991; Martin et al., 1995; Pronovost et al., 1990; Rubenstein et al., 1989). Introversion, impulsivity, anger, and anxiety also act as risk factors in adolescent suicidality (Benjaminsen, Krarup, & Lauritsen, 1990; Beautrais, Joyce, & Mulder, 1999; de Wilde et al., 1993; Kashden, Fremouw, Callahan, & Franzen, 1993; Koslowsky et al., 1992).

Before the models of risk factors can be completed, it is necessary to look more closely at the elements involved in family dysfunction. Attachment Theory (Bowlby, 1969) and related research (Allen et al., 1996; Blatt & Zuroff, 1992; Lipsett & Mitnick, 1991; Main & Goldwyn, 1985; Toth & Cicchetti, 1996) have shown that insecure attachment, characterised by parenting that is cold, rejecting, controlling, and critical, is a major factor in family dysfunction. It is now appropriate to identify parenting characteristics which contribute to family dysfunction, adolescent depression and, in turn, to adolescent suicidality.

4.2 PBI Scales

Bowlby’s (1950, 1969) assertion that children need a secure affectional base from which to explore their world has received much attention in the last two decades. Bowlby contends that this base must include a caregiver who is both available and
responsive to the needs of the child, and also encourages the child to move towards independence in order to achieve social competence (Parker, Hadzi-Pavlovic, Greenwald, & Weissman, 1995). With the creation of the Parental Bonding Instrument (PBI; Parker, Tupling & Brown, 1979), a measure became available for these two dimensions of perceived parenting: parental responsiveness (Care) and encouragement of independence (Protection). The PBI has been used to investigate care and protection in relation to adolescent depression and suicidal behaviour.

The PBI is a 25-item self-report measure. Respondents score the attitudes and behaviours of each parent independently as they remember that parent during their first 16 years of life. Parker, Tupling, and Brown (1979) devised the PBI to examine the parental contribution to a parent-child bond by defining and measuring the constructs of significance. By measuring a range of parental behaviours and attitudes, and then factor analysing the scores, two principal bipolar dimensions of parenting were identified. The first factor was one of affection, emotional warmth, empathy, and closeness as opposed to indifference, emotional coldness, neglect, and rejection. It was labeled 'Care' and accounted for 28% of the variability in scores. The second factor was one of encouraging independence and autonomy as opposed to strong parental control, overprotection, intrusion, excessive contact, and the encouragement of infantilisation. This factor was labeled 'Protection' and accounted for 17% of the variability in scores. The PBI, therefore, yielded two scales, Care and Protection.

The PBI was originally normed on medical students, nurses, college students, and parents of school children. Although these initial samples were relatively small and specific, several other studies have re-examined the factorial structure of the PBI (e.g.,
Arrindell, Hanewald, & Kolk, 1989; Cubis, Lewin, & Dawes, 1989; Kazarian, Baker, & Helmes, 1987; Mackinnon, 1989) using both large and diverse samples. A robust factorial structure has been replicated with both clinical and non-clinical samples.

It is important to note that the PBI is not an objective measure of the care and protection afforded by a parent. Rather, the PBI is a subjective measure of the perceived parental care and protection that a child has received. As Gecas (1971) noted, "Since the child interprets the interaction between himself and his parents, it is his own definition of the situation that is most significant for him" (p. 471). This aspect raises a potential discrepancy between what a person reports about the parent-child relationship and what actually took place within the relationship. Nevertheless, Parker (1983) found that children’s ratings of their parents significantly correlated at approximately 0.50 with parents’ self-ratings of their treatment of their children. Further, siblings and twins were found to have a 0.70 correlation between their ratings for their parents (Parker, 1986; Robins, Helzer, & Croughan, 1981). Thus, subjective reports of parenting style seem to display considerable validity.

Used together, the two scales aid the study of parental bonding (Parker et al., 1979). The PBI has become one of the most commonly used instruments in research with adolescents and adults in exploring parental bonding as a risk factor in depression and suicidal behaviour. Its two dimensions of Care and Protection have discriminated well between suicidal adolescents and non-suicidal adolescents (Adam, Keller, West, Larose, & Goszer, 1994; Martin & Waite, 1994; Tousignant, Bastien, & Hamel, 1993).
4.3 The PBI and Resistance to Depressive Bias

The resistance of the PBI to contamination by mood state has also been demonstrated. Aware that depressed individuals may negatively distort their perceptions of their environment, Gotlib, Mount, Cordy, and Whiffen (1988) gave 201 new mothers the PBI and the Beck Depression Inventory (Beck & Steer, 1987) three days after the birth of their babies (Time 1). Nineteen of the 25 depressed women and 23 non-depressed matched controls were followed up between 2 and 4 years later (Time 2; mean time difference = 30.08 months) and readministered the PBI and the Beck Depression Inventory. Results showed that at both times the depressed women obtained significantly lower Care scores than did either the non-depressed women or those remitted women who were depressed at Time 1 but not Time 2. As well, the depressed and remitted participants obtained significantly higher Protection scores than did the non-depressed participants. Gotlib et al. concluded that perceptions of caring and protection were stable over time, and did not shift with the remission of depressed mood. Also, the results supported Parker et al.'s (1979) proposal that low Care is more predictive of depression than high Protection. The findings demonstrated that Care scores differentiated remitted depression from continuous or relapsed depression, whereas Protection scores did not differentiate.

Similar results were found in a unique twin study by Neale et al. (1994). Using a large sample of 1680 female twins (mean age = 30.1 years), Neale et al. investigated whether the PBI ratings of parents were biased by the reporting styles of depressed and non-depressed participants and whether Care and Protection were genuine risk factors for depression. Measures used were the Center for Epidemiological Studies Depression
Scale (Radloff, 1977) and a 7-item version of the PBI. Greater self-reported depression was consistently associated with lower Care and higher Protection. Neale et al. tested nine different models of the variables and found that models which treated parental ratings as a cause of depression in the offspring fitted the data significantly better than models which treated parental ratings as an outcome of depression. This finding suggests that ratings are not simply due to a negative bias in depressed individuals, and that a substantial part of the variance in rating scores between depressed and non-depressed participants is dependent on the care and protection received from parents.

4.4 Research Findings for PBI Care and Protection

4.4.1 The PBI dimensions and depression. Research has demonstrated that depressed adolescents are significantly more likely to perceive their parents as low in Care and high in Protection. Martin and Waite (1994) surveyed 681 Year-10 students from four schools in Adelaide. The mean age of the students was 15.0 years. The students completed a composite questionnaire which included the PBI, questions about family structure, and an early version of the Youth Self-Report (Achenbach & Edelbrock, 1987).

Overall, Martin and Waite (1994) found that females were significantly more depressed than males (17.5% vs 11.5%). The depressed adolescents rated both parents as significantly less caring and more protective than did non-depressed adolescents. A significantly higher proportion of depressed than non-depressed adolescents (40.0% vs 15.5%) assigned their fathers to low Care and high Protection. Similarly, over 40% of depressed adolescents assigned their mother to low Care and high Protection compared
with 15.7% of non-depressed adolescents. Using stepwise regression, Martin and Waite (1994) found that paternal Care contributed 8.0% to the variance for depression and maternal Care contributed 2.0%.

Kraaij et al. (2003) investigated the relationship between parental bonding and depression in 1310 students in the Netherlands with a mean age of 18.0 years. Depressive symptoms were measured using the Symptom Check List (Derogatis, 1977). Parental bonding was measured using the PBI (Parker et al., 1979). Results showed that adolescents who reported more parental Protection or less parental Care had significantly higher depression scores than adolescents who reported low parental Protection or high parental Care.

In the US, Parker, Hadzi-Pavlovic, Greenwald, and Weissman (1995) used a community study to explore the relationship between depression and parenting factors. The community study surveyed 18,571 adults aged 18 years or older for their rates and risks of psychiatric disorders (Robins & Regier, 1991). Data on parenting was obtained at a 1-year follow-up interview of 3684 residents drawn from Connecticut. Instruments used for assessment included the Diagnostic Interview Schedule (Robins et al., 1981) and two items from the PBI. One item focused on parental Care ("As you remember your mother/father in your first 16 years, how affectionate was she/he to you?") and the other focused on parental Protection ("How much did she/he try to control everything you did?"). Parker et al. had previously established validity for the two items by giving the full PBI to 50 depressed subjects. The intercorrelation between the Care item and the full PBI Care scale scores was 0.85. The intercorrelation for the Protection item was not reported, presumably because Protection failed to predict depression. Significant risk
factors for those diagnosed with Major Depressive Disorder were low parental Care (particularly paternal Care) and female gender, whereas parental Protection was not significant.

Burbach et al. (1989) explored further aspects of depression and the PBI factors using the Diagnostic Interview for Children and Adolescents (Herjanie & Reich, 1982). Adolescents aged 14 to 16 years were drawn from public schools in a midwestern community in the US. The sample comprised 12 depressed students, 16 psychiatric non-depressed students, and 75 control students.

No significant results were found for the depressed group (Burbach et al., 1989). The psychiatric non-depressed group reported significantly lower Care and significantly higher Protection than did the control group. Care and Protection ratings of the depressed adolescents fell midway between each of the other groups, but failed to differ significantly from either other group.

The non-significant results obtained by Burbach et al. (1989) for their depressed group contrast with other findings that low Care and high Protection are risk factors for adolescent depression. However, the small sample size for the depressed group may have compromised the statistical power of the analyses. Moreover, participants completed only one PBI questionnaire for both parents simultaneously, possibly obscuring differences due to the gender effects found in other studies. For instance, Cubis, Lewin, and Dawes (1989) found that females rated their mothers as significantly more caring and less restrictive than did males. By contrast, males rated their fathers as significantly less restrictive than did females.

Unfortunately, none of the above studies included childhood parental loss by
separation or divorce as a risk factor. However, the PBI studies suggest that parental Care, parental Protection, and gender of adolescent may be significant factors associated with depression. This model is illustrated in Figure 4.1.

![Diagram](image)

*Figure 4.1. Proposed associations between Care, Protection, gender, and depression.*

4.4.2 *The PBI dimensions and suicidality.* Research has also demonstrated that adolescents high in suicidality are significantly more likely to perceive their parents as low in Care and high in Protection. Martin and Waite (1994) found that low Care scores and high Protection scores were significantly associated with both suicidal ideation and self-harming behaviour for males and females. As one exception, high paternal Protection scores were not significantly associated with self-harming behaviour for females.

Using stepwise regression, Martin and Waite (1994) found that significant proportions of variance in suicidal thoughts were explained by paternal Care (6.3%), paternal Protection (1.1%), and maternal Care (0.7%). For deliberate self-harm, significant proportions of the variance were explained by paternal Care (6.4%) and maternal Care (1.8%).

The PBI was also used by Adam, Keller, West, Larose, and Goszer (1994) to
explore the relationship between suicidal behaviour and parenting style. Participants were 85 female and 102 male adolescents with a mean age of 14.9 years, who were referred from outpatient and residential treatment centres in Canada. Participants were administered the PBI and a suicide interview, and then placed in one of four groups: ideation but no attempt, single attempt, multiple attempts, and control (neither ideation nor attempts). Proportions of females were significantly higher in the three suicide groups (56%, 54%, 56%) than in the non-suicide group (35%).

Results showed that the pattern of low Care-high Protection differentiated suicidal from non-suicidal adolescents in the sample, but with gender-specific and parent-specific differences (Adam et al., 1994). Suicidal adolescents of both genders reported significantly lower Care and higher Protection scores for their mothers than did non-suicidal adolescents. However, only female suicidal adolescents reported significantly lower Care and higher Protection for their fathers. Male suicidal adolescents in the ideation and multiple attempt groups reported low paternal Care, whereas the single attempt and control groups reported high paternal Care. Also unexpected was the lack of differences in paternal Protection scores between the four male groups.

Because numbers were small, especially in the ideation group, results must be interpreted with caution. Nevertheless, Adam et al. (1994) concluded that these results better supported a continuum hypothesis for suicidal behaviour for females than for males. For females, scores for Care and Protection generally decreased or increased, respectively, along the continuum from non-suicidal to multiple attempts. The pattern was not as clear for males. Adam et al. further concluded that because perceptions of mothers were more predictive of suicidal behaviour than were the perceptions of fathers,
maternal influences may be greater, at least in this age group.

Two large samples were used by Tousignant, Bastien, and Hamel (1993) to investigate the effects of maternal and paternal care and family dysfunction on suicidality, and to see whether the higher rate of suicide attempts by females was related to low care. Participants from the first sample were 2,327 students from six secondary schools in Montreal with a mean age of 16.3 years. The schools represented varied socioeconomic backgrounds. Participants from the second sample were 701 young adults with an age range from 18 to 24 years who were surveyed by random telephone calls. Care was measured by the PBI (Parker, et al., 1979). Any student with a history of attempted suicide was included in the suicidal group.

Tousignant et al. (1993) defined suicidal ideation by the guidelines proposed by Adam (1973) which necessitated the presence of a plan (i.e., choice of means, time of attempt) that was made within the past 3 years. Further, two of the three following conditions had to be met: (1) ideations occurred during at least 3 different time periods, (2) ideations lasted a minimum of two weeks on at least one occasion, and (3) the participant believed that he or she had at least some chance of committing suicide. This definition of ideation is far more stringent than definitions used by other researchers (e.g., Garrison et al., 1991; Kosky, Silburn, et al., 1990; Martin et al., 1995; Pearce & Martin, 1994a; Ritter, 1990).

Results indicated that rates of serious suicidal ideation were 13.2% in the secondary school group and 13.9% in the young adult group (Tousignant et al., 1993). By contrast to results of other research which found no gender differences for suicide attempts (e.g., Garrison et al., 1991; Ritter, 1990; Rubenstein et al., 1989), females in the
secondary school group reported significantly more suicide attempts than did males (17.3% vs. 8.7%). Further, low Care and parental separation were significantly related to suicidality among the secondary school adolescents, but the most critical factor was low paternal Care.

The results from Tousignant et al. (1993) and from Martin and Waite (1994) question Bowlby’s (1969) premise that only secure attachment to the primary caregiver is necessary for healthy emotional development. It seems that paternal attachment is at least as important as maternal attachment. Alternatively, the important feature may be that a secure bond is made between the child and at least one caregiver, whoever that person may be.

The reviewed research suggests that Care, Protection, female gender, and parental loss through separation and divorce are all significant factors involved in adolescent suicidality as well as in adolescent depression. This model is depicted in Figure 4.2.

Figure 4.2. Proposed associations between Care, Protection, female gender, parental loss, and suicidality.
4.4.3 The PBI dimensions and personality factors. Particular personality factors have also been associated with suicidality in non-clinical populations. As was noted with research investigating personality factors and depression, the way these factors interact with suicidality is also not totally consistent. Cubis, Lewin, and Dawes (1989) used the PBI in a large Australian sample to explore the dimensions underlying adolescents’ perceptions of their parents. Participants were 2,147 Year 9 and 10 students from public high schools in rural NSW. The sample was restricted to adolescents from intact families whose mean age was 15.4 years.

Unlike most studies using the PBI, Cubis et al. (1989) subdivided Protection into Social Protection (restriction on one’s social freedom) and Personal Protection (the extent to which one feels dominated and treated as a child). These divisions make it difficult for a direct comparison of this research with other studies. Paternal Care was negatively associated with introversion and impulsivity. Personal Protection by fathers was positively associated with impulsivity. Social Protection by mothers was positively associated with introversion. Maternal Care produced no significant associations with the personality factors. The following model is suggested by the findings, shown in Figure 4.3.
Gender differences were also found (Cubis et al., 1989). Compared with males, females rated their mothers as significantly more caring, were significantly more impulsive, and had more professional consultations for depression.

4.4.4 The PBI dimensions, personality, and suicidality. The New Zealand study by Beautrais et al. (1999) also used the PBI to investigate parental Care and parental Protection. Beautrais et al. used a modified version of the Structured Clinical Interview for DSM-IV (Spitzer et al., 1987) to determine Major Depression and Anxiety Disorder, and a rating scale to measure parental relationship. Parental separation and death were assessed, and standardized questionnaires measured introversion, impulsivity, neuroticism, and hopelessness (described in Chapter 2). Bivariate results showed that suicidal individuals had significantly higher levels of all risk factors than did controls, except for death of a parent.

A model was developed by Beautrais et al. (1999) based on analytical results. In part of the model, Family Factors (i.e., low parental Care, high parental Protection, and
parental separation) significantly contributed to personality factors (i.e., Neuroticism and Hopelessness), which in turn significantly contributed to Psychiatric Disorder (i.e., Major Depression and Anxiety Disorder), which in turn significantly contributed to Serious Suicide Attempts. Family Factors also contributed directly to Psychiatric Disorder. This partial model is shown in Figure 4.4.

![Diagram](image)

**Figure 4.4.** Partial model of risk factors for serious suicide attempts developed by Beautrais (1999).

Overlapping content most likely occurred between the personality factors of Neuroticism and Hopelessness in relation to the psychiatric disorders of Major Depression and Anxiety. Nevertheless, the model proposes that family factors and personality factors are indirectly related to suicidality via depression. Further, this model posits that family factors influence personality factors.

4.5 **Summary of PBI Findings**

In adolescent populations, low Care and high Protection generally represent risk factors for adolescent depression and suicidality. Low paternal Care and high maternal Protection appear to be the most significant factors, but overall, Care seems to be more
important than Protection. However, findings are not entirely consistent across varying populations. Some studies found a strong association between low Care, particularly low paternal Care, and adolescent depression (Beautrais et al., 1999; Martin & Waite, 1994; Parker et al., 1995). By contrast, Burbach et al. (1989) did not find this significant relationship, possibly due to their small sample size.

High Protection, and particularly high maternal Protection, was also strongly associated with adolescent depression (Beautrais et al., 1999; Martin and Waite, 1994). Again, Burbach et al. (1989) failed to obtain a significant relationship, nor did Parker et al. (1995). The small sample of Burbach et al. and the adult sample of Parker et al. may explain the different results. In all four studies, Care contributed more than Protection as a risk factor for adolescent depression.

In relation to adolescent suicidality, studies have also found a strong association with low Care, particularly low paternal Care (Adam et al., 1994; Martin & Waite, 1994; Tousignant et al., 1993). Further, two of these studies also found a positive association with high Protection, particularly high maternal Protection, and suicidality (Adam et al.; Martin & Waite).

Incorporating evidence on personality factors, two studies found that low Care and high Protection were associated with both personality factors and depression. The personality factors were introversion and impulsivity (Cubis et al., 1989), and neuroticism, which included anxiety and impulsivity (Beautrais et al., 1999).

In some studies using the PBI, gender differences were found for both depression and suicidality. Compared with males, females consistently reported more depression (Cubis et al., 1989; Parker et al., 1995) and more suicidality (Martin & Waite, 1994;
Tousignant et al., 1993). The findings for suicidality concur with results of Garrison et al. (1991) and of Martin et al. (1995). By contrast, other studies have not obtained a gender difference for suicidality (e.g., Pearce & Martin, 1994a; Ritter, 1990; Rubenstein et al., 1989).

Except for the study by Garrison et al. (1991), the studies which found gender differences used slightly older participants than the studies which found no gender differences (mean age 16 years vs mean age 15 years). Perhaps age 15 years is important developmentally, especially for girls, who seem to exhibit more suicidality than boys. Alternatively, the studies which found no gender differences tended to have small samples, and thus lack of power may explain the outcome. This study will use participants aged 15 and 16 years to further explore age in relation to gender differences in suicidality.

The next step is to consolidate a basic core model of risk factors for adolescent suicidality. The following chapter combines the research evidence from Chapters 2 and 4 to define such a model.
5.1 Attachment-based Measures of Personality

Millon’s (1969) theory of personality implicates parenting styles and infant bonding in adolescent personality, positing that personality is largely determined by the type of parenting an individual receives. From his attachment-based theory of personality, Millon derived a personality inventory for adolescents, the Millon Adolescent Personality Inventory (MAPI; Millon & Davis, 1993). For Millon, personality is a pattern of “... modes of functioning which emerge from ... the individual’s developmental history, and which now characterize his perceptions and ways of dealing with his environment” (p. 221).

Millon (1969) contended that children engage in a wide variety of spontaneous behaviours, primarily capricious and exploratory reactions to environmental stimuli. Then through interaction with parents, the child learns to discriminate which goals and behaviours are permissible, which are rewarded, and which are not. Therefore, an initially diverse range of behaviours becomes “… narrowed, selective and, finally, crystallized into preferred modes of seeking and achieving” (p. 221). Early attachment patterns and parenting styles are, therefore, crucial determinants of personality in Millon’s theory.

For each personality style, Millon (1969) hypothesised a particular style of parenting that was instrumental in its formation. At the more detailed measurement level of the models under development in this study, Millon’s (1969) adolescent personality questionnaire offers theoretically appropriate measures for Introversion and Impulsivity,
which implicate styles of parenting compatible with the PBI constructs (Parker et al., 1979). Moreover, there appears to be a particularly strong relationship between the parenting style underpinning Millon’s personality type of Inhibited and the dual dimensions of Care and Protection from the PBI.

5.1.1 MAPI personality, parenting, and depression. Millon (1969) suggests that the parents of Introverted children are reserved and superficial, giving little attention or affection. The children are thus deprived of the social and emotional cues necessary to learn normal human attachment behaviours. Introverted children appear shy and devoid of any need to either communicate with or relate affectionately to others. The parenting these children receive is likely to be characterised by low Care. It, therefore, appears appropriate to draw upon Millon’s Introversion Scale as the measure for Introversion in the developing models.

Millon (1969) did not specifically identify a parenting style for his Impulse Control Scale. However, because the MAPI is an adolescent personality questionnaire based on attachment theory, it also appears appropriate to use Millon’s Impulse Control Scale to measure Impulsivity in this study.

Finally, Millon (1969) contends that Inhibited children have parents who continually devalue and criticise them. Such parents handle their infants in a cold and indelicate manner, and belittle the fumbling attempts of first steps and other initiatives taken by these children through their development. The Inhibited child appears highly alert to social stimuli and oversensitive to the moods and feelings of others, especially when fearing rejection or humiliation. Their extreme anxiety disposes them to avoid others. The parenting characteristics for Inhibited reflect low Care and high Protection.
The Inhibited Scale thus appears particularly relevant for use as a personality measure in this study.

Given the parenting characteristics outlined by Millon (1981) for the MAPI Inhibited Scale, it is proposed that PBI Care and Protection are related to Inhibition. In building a risk factor model, an "Inhibited" factor will, therefore, be linked to the Parental Care and Parental Protection factors. This model is depicted in Figure 5.1.

![Diagram](image)

**Figure 5.1.** A parenting factor comprising Care, Protection, and Inhibition.

Research has demonstrated that the MAPI Inhibited Scale is strongly related to adolescent depression (Evert & Trenery, 1990; Pantle, Evert, & Trenery, 1990;). This finding supports Millon's (1981) contention that the Inhibited personality type is very vulnerable to depressive disorders. Moreover, PBI low Care and high Protection are risk factors for depression (Burbach et al., 1989; Martin & Waite, 1994; Parker, Hadzi-Pavlovic et al., 1995). Furthermore, parenting characterised by low Care and high Protection is associated with adolescent suicidality (Adam et al., 1994; Martin & Waite, 1994; Tousignant et al., 1993).
5.2 Development of the Models

5.2.1 The core model. In Chapter 2, a model was proposed for relationships between family factors, depression, and adolescent suicidality. The model was derived from the findings of Garrison et al. (1991) and Rubenstein et al. (1989). This model is presented again in Figure 5.2.

![Diagram showing relationships between Family Cohesion, Family Rigidity, Childhood Parental Loss, Depression, and Suicidality]

*Figure 5.2.* A latent variable model of risk factors in suicidality based on research with normal populations.

There is evidence that Family Cohesion and Family Rigidity depicted in the model are similar to PBI Care (MacFarlane, Bellisimo, & Norman, 1995). There is, likewise, evidence that PBI Protection influences Suicidality via Depression (Beautrais, 1999). Thus the model will replace Family Cohesion and Family Rigidity with PBI Care and PBI Protection.

Chapters 2 and 4 of the introduction used research findings to generate a series of models that represented relationships between elements of parenting, parental loss, gender, mood factors, personality characteristics, depression, and suicidality. This
chapter has incorporated Millon's Inhibited Scale (1969) into the parenting factor. These smaller models can now be integrated incrementally. Figure 5.3 models the relationships between the risk factors of family factors, gender, depression, and suicidality that come out of the literature. The model is considered a core model because the relationships display high consistency across research findings. In this model, Poor Parental Care, Parental Protection, Inhibition, Childhood Parental Loss, and Female Gender directly predict Depression, and Depression alone directly predicts Suicidality.

![Diagram](image)

*Figure 5.3.* The posited core model of relationships between family factors, gender, depression, and suicidality.

5.2.2 *The extended models.* Much less clear is the way in which the core risk factors associate with the mood factors (i.e., anger and anxiety), and the personality traits (i.e., introversion and impulsivity). Two different extended models of risk factors for adolescent suicidality arise, based on conflicting research findings.

Model 1, shown in Figure 5.4, combines model elements from Figures 2.3, 4.1, 4.2, 4.3, and 5.3. This extended model proposes that all risk factors indirectly predict
Suicidality via Depression. Depression alone directly predicts Suicidality. Because Parental Care, Parental Protection, Introversion, and Impulsivity are all treated as independent variables in Model 1, Parental Care and Parental Protection cannot be construed as precursors to Introversion and Impulsivity. Their relationships are represented as intercorrelations.

![Diagram](image)

Figure 5.4. A posited model of indirect relationships from family, mood, and personality factors to Suicidality via Depression.

Model 2, shown in Figure 5.5, combines model elements from Figures 2.4, 4.1, 4.2, 4.3, and 5.3. The second extended model proposes that mood and personality factors directly predict Suicidality, and that some of these factors have antecedents. Depression is influenced by family factors and Gender. Introversion and Impulsivity are influenced
by Poor Parental Care and Parental Protection.

Figure 5.5. A posited model of indirect relationships from family factors, and direct relationships from mood and personality factors to Suicidality.

The directional influences from Care and Protection upon the personality factors are reasoned from attachment theory, which suggests that parenting style directly influences the child's personality. Millon's theory of personality (1969) also supports this premise. A best-fitting model of risk factors will be identified using structural equation modeling to assess these two models.

5.3 Structural Equation Modeling

Current uncertainties in the relationships between family factors, Gender, mood factors, personality characteristics, Depression, and Suicidality point to a need to explore these issues concurrently with the one sample. The use of structural equation modeling (SEM) techniques is a way to tease out these relationships because it allows for complete
and concurrent examination of a set of relationships (Tabachnick & Fidell, 1996). The structural modeling process requires the construction of a theoretically-based path diagram similar to those previously presented.

SEM, then, is a comprehensive statistical modeling approach to testing hypotheses about relationships between observed and latent variables (Hoyle, 1995). This method will be used in this research to test the relationships between risk factors in adolescent depression and suicidality, and is further discussed in Chapter 6.

5.4 Experimental Design

Before reporting Phase 1 of the current study, it is useful to consider the overall experimental design. Phase 1 will use baseline data from an Experimental Group of Year-9 students to investigate and develop structural models of selected risk factors for adolescent suicidality. Students will then be introduced to the internet site, Reach Out!, as a psychoeducational prevention strategy. After one month (Phase 2), the Experimental Group will be re-tested. This data will be analysed for short-term consistency of the developed models, and for short-term intervention effects upon the risk factors. Evaluation of intervention will use all risk factors represented in the models but for the parenting factors (i.e., PBI Care, PBI Protection, and family loss).

After twelve months (Phase 3), the Experimental Group will again be re-tested. In analyzing results, baseline data from a Control Group of Year-10 students will be included in order to disentangle and evaluate age effects, long-term intervention effects, and possible cohort effects upon the risk factors. The analyses will involve the conjoint consideration of two sets of comparisons. The first will be a within group pretest-
posttest for the Experimental Group. The second will be a between-group comparison of posttest data for the Experimental Group versus baseline data from a Control Group of similar age. Further discussion of these comparisons is given in Chapter 10 which reports the Phase 3 findings.
Chapter 6: Phase 1 Aims, Method, and Results

6.1 Aims

In Phase 1, a core model of risk factors for adolescent suicidality will be generated. This model will be built incrementally, and will be guided by a posited model, theory, and previous research evidence (Aim 1). Second, an extended model of risk factors for adolescent suicidality will be generated. This model will be built incrementally through the addition of mood and personality factors to the previously developed core model. The evolving model will also be guided by theory and previous research evidence (Aim 2). Third, the developed extended model will be evaluated to determine whether the model primarily represents the risk factors as direct influences upon suicidality or as indirect influences via Depression (Aim 3). Finally, possible differences in risk factors between adolescents living in regional versus rural areas of Victoria will be explored (Aim 4).

6.2 Hypotheses

The hypotheses for Phase 1 are:

1. It is predicted that the relationships between risk factors as displayed in the posited core model will be obtained (Figure 5.3).

2. It is predicted that all risk factors in the extended model will have significant associations with Suicidality.

3. Predictions for the comparison of the two extended models are less certain. The weight of research findings more likely suggests indirect effects from mood and
personality factors upon Suicidality via Depression (Figure 5.4). Thus the relationships embodied in this model are hypothesised to fit the data better than those in Figure 5.5.

4. Given that adolescent suicide is highest in rural areas, it may be predicted that risk factors will be higher for the rural than regional sample.

Method

6.3 Participants

Participants for Phase 1 were 191 Year-9 students attending seven secondary schools in regional and rural Victoria, Australia. The four regional schools were located in Geelong; the three rural schools were located in Colac and Maryborough. School locations spanned the lower-middle to upper-middle socioeconomic range. Schools are listed in Table 6.1.

Average age of the students was 14.9 years, with an age range from 13.3 years to 16.2 years. Of the total participants, 21.1% were males from regional Victoria, 22.2% were females from regional Victoria, 33.5% were males from rural Victoria, and 22.2% were females from rural Victoria. It is noted that males from rural Victoria were somewhat overrepresented. Further, 29.0% of males and 27.7% of females were from homes where parents were separated, and 2.0% of males and 1.2% of females were from homes where one parent had died. Rates of participation in the study from each school, based on the number of students who were invited to participate, are also presented in Table 6.1.
Table 6.1

*Participating school, number and response rate at each school*

<table>
<thead>
<tr>
<th>School</th>
<th>Number of students</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colac College</td>
<td>43</td>
<td>89.6%</td>
</tr>
<tr>
<td>Highview Christian College</td>
<td>41</td>
<td>60.0%</td>
</tr>
<tr>
<td>Newcomb Secondary College</td>
<td>35</td>
<td>75.0%</td>
</tr>
<tr>
<td>Colac High School</td>
<td>25</td>
<td>50.0%</td>
</tr>
<tr>
<td>Geelong High School</td>
<td>19</td>
<td>38.0%</td>
</tr>
<tr>
<td>Belmont High School</td>
<td>18</td>
<td>37.5%</td>
</tr>
<tr>
<td>Geelong College</td>
<td>10</td>
<td>10.4%</td>
</tr>
</tbody>
</table>

6.4 Materials

Participants completed a questionnaire comprised of the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979), the Millon Adolescent Personality Inventory (MAPI: Millon, Green, & Meagher, 1982), three scales from the Profile of Mood States Inventory (POMS; McNair, Lorr, & Droppleman, 1992), eight items on suicidal behaviour, and questions on loss and general demographics.

6.4.1 The Parental Bonding Instrument (PBI). The PBI (Parker, Tupling, & Brown, 1979) is a 25-item self-report measure. It was devised to examine perceptions of one's relationships to one's mother and father. The PBI yields two fundamental bipolar dimensions of Care and Protection. There are 12 items for Care and 13 items for Protection. Participants rate the attitudes and behaviours of each parent, or parent figure,
over the first 16 years of life. Items are rated on a 4-point scale from 0 to 3, where 0 = “very like” and 3 = “very unlike.”

The PBI was chosen because it has sound psychometric properties, and is often used to assess adolescents’ perceptions of their parents. Internal consistency reliability coefficients of 0.88 for Care and 0.74 for Protection are reported (Parker et al., 1979). Several other studies have replicated similar values (Arrindell, Hanewald, & Kolk, 1989; Kazarian, Baker, & Helmes, 1987; MacKinnon, Henderson, Scott & Duncan-Jones, 1989; Richman & Flaherty, 1986). In all cases, the internal consistency correlations were at least as high as the values in the original study, demonstrating the homogeneity of the PBI scales. Further, psychometric properties have been shown to be independent of the parent’s or child’s gender (Parker, 1983, 1989).

Test-retest reliability values for a three-week interval .76 for the Care Scale and .63 for the Protection Scale (Parker et al., 1979). Others have obtained equally high or higher values for considerably longer time intervals (MacKinnon et al., 1989; Wilhelm & Parker, 1990).

Effects of depression on PBI ratings have been examined in several studies (e.g., Parker, 1983; Plantes, Prusoff, Brennan & Parker, 1988). Participants were tested when initially depressed and several weeks later when improved. Reliability coefficients ranged from 0.87 to 0.96, indicating that the validity of the PBI is not compromised by mood.

A factor analysis of PBI items identified two clear factors, Care and Protection (Parker et al., 1979). Others have replicated this factorial structure (Arrindell, Hanewald, & Kolk, 1989; Kazarian, Baker, & Helmes, 1987; MacKinnon, Henderson, Scott, & Duncan-Jones, 1989).
6.4.2 Millon Adolescent Personality Inventory (MAPI). The MAPI (Millon, Green, & Meagher, 1982) is a personality inventory for adolescents and was constructed from a theory of personality based on attachment styles (Millon, 1969; Millon & Davis, 1993). The MAPI is a 150-item true-false questionnaire that includes eight major personality scales (amongst them Inhibited and Introversive), and an Impulse Control scale. The Inhibited scale has 41 items, the Introversive scale has 31 items, and the Impulse Control scale contains 35 items. Respondents make true or false responses to the items. The MAPI Inhibited scale was chosen to complement the PBI parenting measures because it implicates similar constructs of parental Care and Protection. The Introversive and Impulse Control scales were selected to measure the risk factors of introversion and impulsiveness, respectively.

Validity of the MAPI scales was addressed during their development. First, items for each scale were derived according to an explicit theoretical framework. Second, those items placed in the correct scales by at least 75% of professional judges were retained (Millon & Davis, 1993). Further, psychometric properties of the three selected MAPI scales are not reported because it is intended to develop new congeneric scales from the items comprising each of the scales.

6.4.3 Profile of Mood States (POMS). The POMS (McNair, Lorr, & Droppleman, 1992) is a rating scale of six mood states. Respondents rate 65 adjectives on a 4-point scale where 0 = “Not at all” and 4 = “Extremely” to describe their mood over the past fortnight. Three of the six scales are used in this study: Tension-Anxiety, Depression-Dejection, and Anger-Hostility.

The POMS was chosen because of its simplicity and high reliability. The internal consistency of the POMS is excellent. Internal consistency reliability coefficients of the
three selected scales range from 0.89 for Anxiety to 0.95 for Depression (McNair et al., 1992). Test-retest reliability is also very acceptable, given that the scales measure moods that are expected to fluctuate over time. The reliability coefficients range from 0.65 for Anxiety to 0.74 for Depression over a median period of 20 days, and from 0.43 for Anxiety to 0.53 for Anger over a six-week period.

Six independent factor analytic studies were conducted in developing and validating the POMS (McNair et al., 1992). These studies demonstrated that the six factors were robust through their consistent replication. Concurrent validity has been demonstrated through the correlation of POMS scales with conceptually similar instruments. Correlation coefficients of 0.76 and 0.85 were obtained for Anxiety and Depression, respectively, when these scales were compared with related scales on the Hopkins Symptom Distress Scales (Parloff, Kelman & Frank, 1954). When the POMS was correlated with the more recent MMPI-2 (Hathaway & McKinley, 1989), a correlation coefficient of 0.65 was obtained between the two Depression scales.

6.4.4 Self-report Adolescent Suicide Questionnaire. This self-report measure was developed by the author from the research literature on suicidality measures. The continuum-style questionnaire had respondents indicate yes or no to eight questions about specific aspects of suicidal behaviour. A total score was obtained by summing the positive responses. This measure included two questions about general feeling, three ideation questions concerning different levels of a suicide plan, and one question each for threats, self-harm, and direct suicide attempts. This measure produced an alpha reliability for internal consistency of .81. To lessen the impact of the item content, these questions were interspersed throughout the MAPI items. Specific questions are listed in Table 6.3 of the Results section.
6.4.5 Questions on loss and general demographics. Two questions on parental loss determined whether the adolescent had experienced either separation or the death of a parent. Further questions asked the adolescent’s gender and date of birth.

6.5 Procedure

Ethics approval was received from both Deakin University (Appendix A) and the Victorian Education Department (Appendix B). Research was conducted at all times in accordance with the principles contained in the National Statement on Ethical Conduct in Research involving Humans (1999). Principals of seven secondary colleges were contacted to participate in the study. These schools were chosen to enable comparisons between regional and rural areas. A letter (Appendix C) was distributed to all parents of prospective participants, explaining the study, and inviting them to return the consent form if they were willing for their child to participate.

Prior to the administration of the questionnaire, all participants were given written and verbal explanations about the study by the researcher, and instructions for completing the questionnaire. Students were assured of the confidentiality of their responses, with one exception. As recommended by Shochet and O’Gorman (1995), students were informed that if they reported a strong sense of self-harm, the researcher would speak with them further about how they were feeling and organise counselling as appropriate. All participants also received a list of local community service organisations specific to their locale that could be contacted if the questionnaire raised any concerns.

As outlined by Shochet and O’Gorman (1995), immediately after each session was completed, the researcher went through all responses to the item “I have a detailed plan
for how to end my life,” and spoke personally with each student who answered “yes” to this question. This response was considered to flag students most likely to attempt suicide. The researcher discussed with the student his or her particular response, encouraged contact with an independent and qualified health professional as appropriate, and organised this contact.

If the student agreed to this process, then the assessor worked through with the student the appropriateness of informing one or both parents. If the student refused professional support, the researcher personally liaised with a suitable assessor from a specialist service about the acquired information. If the assessor affirmed that the risk was high, then the researcher again talked with the student and explained the researcher’s duty to protect. If the student still refused professional support, protective intervention was sought from a medical professional and/or support person. The above is consistent with the procedure outlined by both Shochet and O’Gorman (1995) and Petersen and Siddle (1995) in addressing the unique circumstances associated with research into suicidal behaviour. All students in this study who were offered further support, accepted.

Results

6.6 Overview of Analyses

Study participants were tested for parenting factors (Parental Care, Parental Protection, Inhibition, and Childhood Parental Loss), Gender, mood (Anger and Anxiety), personality traits (Introversion and Impulsivity), Depression, and Suicidality. This data will now be used to evaluate and modify posited models of risk factors for suicidal behaviour in adolescents. The data will also be used to explore possible differences in risk factors between adolescents living in regional versus rural areas of
Victoria.

The results for Phase 1 will first report on data preparation, general descriptives, and the development of three short-form personality scales. Next will be an overview of structural equation modeling (SEM), followed by model development for the core model, first at the measurement level and then at the structural level. The two extended models will then be compared and evaluated. Finally, results from a multivariate analysis of variance will be reported to determine possible regional versus rural differences in the risk measures.

6.7 Data Preparation and Assumptions

Random missing values were replaced by the mean for that item, as recommended by Tabachnick and Fidell (1996). Prior to analysis, all variables were screened separately for normality and linearity, and for univariate and multivariate outliers. Several random univariate outliers were recoded to the cut-off criterion of three z-scores beyond the mean, as recommended by Tabachnick and Fidell (1996), with the exception of the suicidality items.

The eight suicidality items were extremely skewed. Since they represented the actual endorsement frequencies for each item, it was inappropriate to perform any transformation. However, because SEM is highly sensitive to outliers, each measure was explored using histograms and box plots, as recommended by Holmes-Smith (1999). As a result, and for that item for the SEM analyses only, several high scores in the suicidality items were recoded to one unit beyond the 25th or 75th percentiles.

An initial total of 191 Year-9 students participated in Phase 1. Fourteen students reported having a detailed plan to end their life, and were followed up. Of these
students, one student admitted he was fooling around, and seven students had misunderstood the question. Their answers were changed accordingly. Five participants were excluded due to multivariate outliers. One further student was excluded due to failing to complete the survey form. All subsequent analyses used 185 students. A significance level of $p < .05$ was used for all analyses, as recommended by Tabachnick and Fidell (1996).

6.8 Short-form Scales

Short-form versions of the MAPI scales (Millon et al., 1982) were deemed desirable for two reasons. Completion of the questionnaire would be less tedious for the students, and thereby maximise response rates. Second, the scales had item overlap but SEM analyses require that separate measures have entirely separate content. Further, according to Holmes-Smith and Rowe (1994), a congeneric scale enables more precise measurement of the latent variable. In a congeneric model, the total number of indicator variables is reduced to 3 to 6 variables, all with a similar focus, giving content specificity to the variable.

A two-stage process was followed to create the congeneric scales. First, the three MAPI scales (i.e., Inhibited, Introverted, and Impulse Control) were shortened whilst maintaining maximum internal consistency. Second, congeneric models were formed from these short-form scales by using squared multiple correlations to identify the most cohesive 3 to 6 items, as recommended by Holmes-Smith and Rowe (1994). The full MAPI scales were administered at Phase 1 in order to compare sample norms with those reported in previous research. However, the congeneric scales were used in the subsequent SEM analyses.
Content analyses of the scale items were performed for the MAPI Introversive, Inhibited, and Impulse Control scales (Millon et al., 1982). The content for the MAPI Introversive scale was mapped to content from both the NEO PI-R Extraversion Scale (Costa & McCrae, 1992) and the Extraversion Scale from the Eysenck Personality Questionnaire - Junior (Eysenck & Eysenck, 1970), both highly established and reliable measures of extraversion. Both of these scales tap warmth, sociability, high energy, activity, and excitement-seeking, whereas the MAPI Introversive Scale taps not keeping one’s feelings under control, loss of temper, and impulsivity. In order to more closely reflect established extraversion dimensions, a content analysis identified items from three MAPI scales (Introversive, Inhibited, & Cooperative) as most reflective of Introversion. All items bearing on impulsivity and anger were excluded, as these constructs formed other measures in the SEM model.

This process generated an 18-item Introversion Scale with an inter-item reliability of .79. This scale focused on warmth, sociability, and ability to control one’s emotions, aspects of personality that are generally associated with extraversion. The correlation between the original MAPI Introversive Scale and the new short-form Introversion Scale was .03. There was, therefore, no resemblance between the construct tapped by the original scale and the Introversion Scale used in this research.

A similar process was followed to develop a short-form Impulsivity Scale. The content for the MAPI Impulse Control Scale was mapped against the NEO PI-R scale for Deliberateness (Costa & McCrae, 1992). The NEO scale emphasised impulsivity, impatience, carelessness, and moodiness, whereas the MAPI Impulse Control Scale also contained many items emphasising anger, guilt, and emotionality. Content analysis identified items from the three MAPI scales (Impulse Control, Inhibited, & Cooperative)
as most reflective of deliberation. This process generated a 9-item Impulsivity Scale with an inter-item reliability of .69. The correlation between the original MAPI Impulse Control Scale and the short-form Impulsivity Scale devised for this research was .82. Therefore, the short-form scale tapped a similar construct to the original MAPI Scale.

To prevent multicollinearity in the new Inhibition Scale, items that overlapped with the short-form Introversion and Impulsivity Scales, and the PBI scales, were omitted. The resulting short-form Inhibition Scale contained 15 of the original 41 items and had an inter-item reliability score of .82. The correlation between this scale and the original Inhibited scale was .84, indicating a substantial similarity of the constructs. The content of the short-form Inhibition items focused on levels of self-confidence, confidence about one’s future, and satisfaction with one’s self and one’s body image. Conversion of the short-form scales to congeneric scales is described later in this Results section.

6.9 General Descriptives

6.9.1 Assessment of perceived parenting styles. Perceived parenting styles were assessed by the PBI Care and Protection Scales, and the full Inhibited Scale from the MAPI (Millon et al., 1982). Summary values for the parenting measures by gender are shown in Table 6.2.
Table 6.2

*Scale range, mean, and standard deviation of parenting measures by gender*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Scale Range</th>
<th>Males&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Females&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>PBI Mother Care</td>
<td>0-36</td>
<td>28.19</td>
<td>5.98</td>
<td>28.29</td>
</tr>
<tr>
<td>Father Care</td>
<td>0-36</td>
<td>26.47</td>
<td>6.55</td>
<td>24.65</td>
</tr>
<tr>
<td>Mother Protection</td>
<td>0-39</td>
<td>11.83</td>
<td>5.12</td>
<td>11.79</td>
</tr>
<tr>
<td>Father Protection</td>
<td>0-39</td>
<td>9.24</td>
<td>5.28</td>
<td>10.57</td>
</tr>
<tr>
<td>MAPI</td>
<td>Inhibited-full form</td>
<td>0-41</td>
<td>10.57</td>
<td>5.94</td>
</tr>
</tbody>
</table>

<sup>a</sup> N = 101; <sup>b</sup> N = 84.

The mean PBI scores in this research match those found by others for adolescents of a similar age (Adam et al., 1994; Beauchais et al., 1999; Burbach et al., 1989; Martin & Waite, 1994; Parker et al., 1995). For example, in an Australian study, Martin and Waite found mean scores for males of 27.1 (SD = 6.6) for Mother Care, 24.5 (SD = 6.6) for Father Care, 11.3 (SD = 7.2) for Mother Protection, and 10.2 (SD = 6.0) for Father Protection. Values for females were 29.2 (SD = 6.7) for Mother Care, 26.1 (SD = 7.5) for Father Care, 9.8 (SD = 6.9) for Mother Protection, and 10.5 (SD = 6.6) for Father Protection.

Inhibited Scale scores from the MAPI are also shown in Table 6.2. The original Inhibited Scale score of the MAPI was calculated in order to compare the mean score of the sample in this research with MAPI norms (Millon, et al., 1982). The mean scale scores found in this research sample were comparable to those for the normative group.
Males in the normative group had a mean of 12 (SD not given). Females in the normative group had a mean of 13.

6.9.2 Assessment of mood and personality measures. Mood was assessed by the POMS Anger, Anxiety, and Depression scales (McNair et al., 1992). Personality was evaluated by the MAPI Introversive, and Impulse Control scales (Millon et al., 1982). Scale scores were calculated by the original MAPI Introversive and Impulse Control scales in order to compare them with MAPI norms. Summary values for the mood and personality measures by gender are shown in Table 6.3. For the personality scales, mean values are comparable to the norms for both the Introversive Scale (male mean = 15; female mean = 13), and the Impulse Control Scale (male mean = 12; female mean = 12) given in the MAPI manual (Millon et al., 1982).

Table 6.3

Scale range, mean, and standard deviation of mood and personality measures by gender

<table>
<thead>
<tr>
<th>Measure</th>
<th>Scale Range</th>
<th>Males&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Females&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Females&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>POMS Anger</td>
<td>0-48</td>
<td>10.30 7.34</td>
<td>14.01 10.59</td>
<td>11.98 9.13</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0-36</td>
<td>7.45 4.20</td>
<td>9.51 5.71</td>
<td>8.39 5.03</td>
</tr>
<tr>
<td>Depression</td>
<td>0-60</td>
<td>5.86 6.56</td>
<td>13.92 12.34</td>
<td>9.52 10.41</td>
</tr>
<tr>
<td>MAPI Introversive</td>
<td>0-31</td>
<td>13.42 3.86</td>
<td>11.41 3.71</td>
<td>12.52 3.92</td>
</tr>
<tr>
<td>Impulse Control</td>
<td>0-31</td>
<td>13.67 5.73</td>
<td>13.04 5.62</td>
<td>13.22 5.61</td>
</tr>
</tbody>
</table>

<sup>a</sup>N = 101; <sup>b</sup>N = 84.
No adolescent norms are available for the POMS. However, in an Australian study, Smith (1994) reported scores for 200 undergraduate psychology students with a mean age of 26.9 years, and of whom 76% were female. Smith found a mean score of 9.8 ($SD = 6.6$) for Depression, and a mean score for Anxiety of 16.3 ($SD = 10.6$). The mean for Depression in the current study was similar to that of Smith; however, the mean for Anxiety in the current study was lower than in the Smith study. Smith also had an older sample than the current research.

6.9.3 Assessment of suicidal behaviour. Students were assessed on eight characteristics of suicidal behaviour. The items and their endorsement frequencies are shown in Table 6.4. For all items, females had higher endorsement frequencies than did males. For those items in this research similar to items in the Suicide Ideation Questionnaire (Reynolds, 1987), endorsement frequencies were comparable to those norms which were based on a sample of over 6000 adolescents (mean age = 16.1 years). Those endorsement frequencies were: 26% believed that life is not worth living, 25% believed no one would miss them if they were not here, 11% had told at least one other person that they were going to take their life, and 10% had thought about killing themselves at least once in the past month. Endorsement frequencies found in this research were also comparable to the frequencies found in previously reviewed research (eg., Crook & Raskin, 1975; Garrison et al., 1991; Kosky, Silburn, et al., 1990; Pronovost et al., 1990; Ritter, 1990; Rubenstein et al., 1989).
Table 6.4

Endorsement frequencies of suicidal behaviour items by gender

<table>
<thead>
<tr>
<th>Item</th>
<th>Endorsement Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I sometimes believe life is not worth living.</td>
<td>Males $^a$</td>
</tr>
<tr>
<td>No one would miss me if I was not here.</td>
<td>13.37</td>
</tr>
<tr>
<td>I often think about ending my life.</td>
<td>13.90</td>
</tr>
<tr>
<td>I have a general plan for how to end my life.</td>
<td>7.92</td>
</tr>
<tr>
<td>I have deliberately injured or harmed myself.</td>
<td>6.93</td>
</tr>
<tr>
<td>I have told at least one other person that I am going to take my life.</td>
<td>11.68</td>
</tr>
<tr>
<td>I have tried to kill myself.</td>
<td>3.96</td>
</tr>
<tr>
<td>I have a detailed plan for how to end my life.</td>
<td>1.00</td>
</tr>
</tbody>
</table>

$^a N = 101$; $^b N = 84$

6.10 *Structural Equation Modeling*

Structural Equation Modeling (SEM) was used to examine the association of risk factors for adolescent depression and suicidality, and to develop a best possible model of those risk factors. Two hypothesised models were then compared with the developed model in order to establish whether the extra mood and personality factors contribute to Suicidality directly or indirectly via Depression.

SEM offers a comprehensive statistical modeling approach to testing hypotheses about relationships between observed and latent variables (Hoyle, 1995). This process involves proposing a set of relationships (i.e., a model) and evaluating the consistency of the model in an observed covariance matrix (Hoyle & Smith, 1994). Advantages of
SEM include: the ability to represent unobserved concepts in relationships, the ability to account for measurement error in the estimation process, the ability to test competing models, and the capacity for multi-group analyses to determine the extent to which a model is consistent across time and over different groups of subjects (Farrell, 1994; Hoyle, 1995; Hull & Mendolia, 1991). Each reason is pertinent to this research.

All models were assessed using AMOS 4.0 (Arbuckle & Wothke, 1999). This study used a sample size of nearly 200, as recommended by Byrne (2001), Enders and Bandalos (2001), and Hoelter (1983). A significance level of $p < .05$ was used for all SEM analyses. Each latent variable was analysed for outliers. The error variance and regression coefficient were calculated for each latent variable from the scale reliability, standard deviation, and variance (Holmes-Smith & Rowe, 1994). At all times, both theoretical hypotheses and empirical evidence were used to guide the specification of models. The Maximum Likelihood Procedure and Extraction Method were used, because they are particularly robust to deviations from multivariate normality, and are recommended by Chou, Bentler, and Satora (1991) and Holmes-Smith (1999). Modification indices were used to improve model fit, but only when compatible with theory and previous research findings. Acceptability of models was based on an examination of goodness-of-fit measures.

6.10.1 Goodness-of-fit measures. This research reports four absolute fit measures: the Chi-square statistic, the normed chi-square statistic, the Goodness-of-Fit Index (GFI), and the Root Mean-Square Error of Approximation (RMSEA). Also reported is one incremental fit measure, the Incremental Fit Index (IFI, Bollen, 1989a). Absolute fit measures determine the way the overall model predicts the observed covariance matrix. The most fundamental measure of overall fit, and the only statistically based measure, is
the likelihood-ratio chi-square statistic. A value $p > .05$ indicates that the actual and predicted input matrices are not statistically different, and that the proposed model fits well. The chi-square statistic is given because it is convention to do so. However, this measure is sensitive to sample size (Holmes-Smith, 1999; Hoyle, 1995) and can be misleading. The normed chi-square statistic is the chi-square value divided by the degrees of freedom, and is less sensitive to sample size (Byrne, 2001). A value $> 1$ and $< 3$ indicates a satisfactory fit.

Two other commonly reported absolute fit measures are the GFI and the RMSEA. The GFI ranges from 0 (poor fit) to 1 (perfect fit). Values $> .9$ are considered satisfactory. The RMSEA is the average residual covariance and indicates how well the model would fit the population covariance matrix were it available (Browne & Cudeck, 1993). Values of $p < .05$ indicate good fit, values of $p < .08$ indicate reasonable fit, and values of $p < .10$ indicate mediocre acceptability (Byrne, 2001).

Incremental fit measures compare the proposed model to some baseline model. One popular measure recommended by Hoyle (1995) is Bollen's Incremental Fit Index (IFI; Bollen, 1989a). The IFI also accounts for the degrees of freedom and, therefore, addresses the issues of parsimony and sample size. It ranges between 0 (no fit at all) and 1 (perfect fit). Generally, a value of $p > .9$ indicates acceptable fit, with a value of $p > .95$ indicating superior fit (Byrne, 2001).

6.11 **SEM and Congeneric Models for the Short-form Scales and Suicidality**

To increase scale reliabilities for the three short-form scales, Inhibition, Introversion, and Impulsivity, and for the Suicidality Scale, one-factor congeneric models were developed, as recommended by Holmes-Smith & Rowe (1994). The
method was to reduce the number of items per scale, one at a time, based on the squared multiple correlation for each item. The inclusion criterion was that the squared multiple correlation must be at least .3. After finalizing the items in each scale, factor score weights were used to calculate each summary scale score. Finally, each new measure had values calculated for its error variance and regression coefficient. These values were then specified in the subsequent structural models.

6.11.1 Inhibition. Beginning with the 15-item short-form scale, the one-factor congeneric model for Inhibition produced a satisfactory set of 5 items yielding $\chi^2(5, N = 185) = 9.33, p = .097$, $\chi^2/df = 1.88$, GFI = .98, IFI = .98, and RMSEA = .07. All goodness-of-fit values indicated a very strong model (Byrne, 2001). The individual items, squared multiple correlations, and factor score weights are given in Table 6.5. The resultant mean for the congeneric Inhibition scale was .24 ($SD = .29$); scale reliability = .77. One item that fell just below the SMC cutoff of .3 was retained because it retained the meaning of the construct. Item content focused on lack of direction and personal cohesion.
Table 6.5

*Inhibition item with squared multiple correlations and factor score weights*

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>SMC</th>
<th>FSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>59</td>
<td>Others my age seem more sure than I am of who they are and what they want.</td>
<td>.30</td>
<td>.12</td>
</tr>
<tr>
<td>77</td>
<td>I feel pretty aimless and don't know where I'm going.</td>
<td>.34</td>
<td>.15</td>
</tr>
<tr>
<td>93</td>
<td>Others my age seem to have things together better than I do.</td>
<td>.54</td>
<td>.24</td>
</tr>
<tr>
<td>115</td>
<td>I doubt if I'll make much of myself in life.</td>
<td>.26</td>
<td>.14</td>
</tr>
<tr>
<td>143</td>
<td>I often feel as if I'm floating around, sort of lost in life.</td>
<td>.58</td>
<td>.28</td>
</tr>
</tbody>
</table>

*Note. N = 185. SMC = Squared Multiple Correlation; FSW = Factor Score Weight.*

Factor Score Weights are calculated from the variance and factor loading matrices, and are not linearly proportional to factor loadings.

6.11.2 *Introversion.* Beginning with the 18-item short-form scale, the one-factor congeneric model for Introversion produced a satisfactory set of 5 items yielding $\chi^2(5, N = 185) = 8.25, p = .143, \chi^2/df = 1.65, GFI = .98, IFI = .99$, and RMSEA = .06. All goodness-of-fit values indicate a very strong model (Byrne, 2001). The individual items, squared multiple correlations, and factor score weights are given in Table 6.6. The resultant mean for the congeneric Introversion scale was .77 ($SD = .90$); scale reliability = .78. Two items that fell just below the SMC cutoff of .3 were retained because they retained the meaning of the construct. Item content focused on social isolation.
Table 6.6

Introversion items with squared multiple correlations and factor score weights

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>SMC</th>
<th>FSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>38a</td>
<td>My social life is very satisfying to me.</td>
<td>.25</td>
<td>.31</td>
</tr>
<tr>
<td>82</td>
<td>I sometimes feel I am in this world all alone.</td>
<td>.26</td>
<td>.30</td>
</tr>
<tr>
<td>92</td>
<td>I very often think I am not wanted by others in a group.</td>
<td>.56</td>
<td>.71</td>
</tr>
<tr>
<td>101</td>
<td>I feel left out of things socially.</td>
<td>.59</td>
<td>.82</td>
</tr>
<tr>
<td>154</td>
<td>I often feel that others do not want to be friendly to me.</td>
<td>.47</td>
<td>.57</td>
</tr>
</tbody>
</table>

Note. N = 185. SMC = squared multiple correlation; FSW = factor score weight.

* item is reverse coded.

Factor Score Weights are calculated from the variance and factor loading matrices, and are not linearly proportional to factor loadings.

6.11.3 Impulsivity. Beginning with the 9-item short-form scale, the one-factor congeneric model for Impulsivity produced a satisfactory set of 3 items yielding $\chi^2(3, N = 185) = .69, p = .41, \chi^2/df = .23$, GFI = .99, IFI = 1.00, and RMSEA = .00. The normed chi-square value is low, but all other goodness-of-fit values are acceptable (Byrne, 2001). The individual items, squared multiple correlations, and factor score weights are given in Table 6.7. It should be noted that factor score weights are unstandardised and can produce loadings greater than one. The resultant mean for the congeneric Impulsivity scale was .85 ($SD = .76$); scale reliability = .65. Item content focused on lack of cooperation and conformity.
Table 6.7

*Impulsivity items with squared multiple correlations and factor score weights*

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>SMC</th>
<th>FSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>I always try to do what is proper.</td>
<td>.25</td>
<td>.45</td>
</tr>
<tr>
<td>11</td>
<td>I am a quiet and cooperative person.</td>
<td>.35</td>
<td>.65</td>
</tr>
<tr>
<td>21</td>
<td>I like to follow instructions and do what others expect of me.</td>
<td>.63</td>
<td>1.28</td>
</tr>
</tbody>
</table>

Note. N = 185. SMC = squared multiple correlation; FSW = factor score weight.

All items are reverse coded. Factor Score Weights are calculated from the variance and factor loading matrices, and are not linearly proportional to factor loadings.

6.11.4 *Suicidality.* The Suicidality Scale was intended to represent a continuum of behaviour along a single dimension ranging from low levels of risk (i.e., believing life is not worth living) to high levels of risk (i.e., attempting suicide). In order to confirm that all items were appropriate to the scale, a Principal Components Analysis (PCA) was performed on all eight items. One principle component was extracted, with all coefficients well above .3, as recommended by Tabachnick and Fidell (1996). Therefore, the eight items represented a single common dimension and were retained.

The one-factor congeneric model for Suicidality yielded \( \chi^2(20, N = 185) = 115.38, p < .001 \), \( \chi^2/df = 5.77 \), GFI = .87, CFI = .82, and RMSEA = .16, an unsatisfactory fit for all four measures (Byrne, 2001). Using histograms and box plots, this new variable was analysed for outliers, as recommended by Holmes-Smith and Rowe (1994). High scores were reduced to the 75th percentile.

Based on the modification indices, two adjustments were made to the model. First,
the error terms between the items "I sometimes believe life is not worth living" and "I often think about ending my life" were correlated. These two statements were at the low end of the continuum and had similar factor loadings. Second, the error terms between the items "I have a detailed plan for how to end my life" and "I have tried to kill myself" were correlated. These two statements were at the high end of the continuum and also had similar factor loadings. The amendments yielded a $\chi^2(18, N = 185) = 51.50, p < .001$, $\chi^2/df = 2.86$, GFI = .94, IFI = .94, and RMSEA = .10, three of the four measures indicating a strong fit (Byrne, 2001). The scale reliability was .81. The individual items, factor loadings, and factor score weights are given in Table 6.8.

Table 6.8

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
<th>Factor Score Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>No one would miss me if I was not here.</td>
<td>.54</td>
<td>.08</td>
</tr>
<tr>
<td>I sometimes believe life is not worth living.</td>
<td>.49</td>
<td>.03</td>
</tr>
<tr>
<td>I often think about ending my life.</td>
<td>.65</td>
<td>.12</td>
</tr>
<tr>
<td>I have deliberately injured or harmed myself.</td>
<td>.58</td>
<td>.11</td>
</tr>
<tr>
<td>I have worked out a general way to end my life.</td>
<td>.65</td>
<td>.13</td>
</tr>
<tr>
<td>I have told at least one other person that I am going to take my life.</td>
<td>.69</td>
<td>.20</td>
</tr>
<tr>
<td>I have a detailed plan for how to end my life.</td>
<td>.72</td>
<td>.28</td>
</tr>
<tr>
<td>I have tried to kill myself.</td>
<td>.62</td>
<td>.12</td>
</tr>
</tbody>
</table>

Note. $N = 185$. Factor Score Weights are calculated from the variance and factor loading matrices, and are not linearly proportional to factor loadings.
6.12 The Measurement Models

6.12.1 The POMS scales. Measurement models were also developed for the POMS Scales (i.e. Anger, Anxiety, and Depression; McNair et al., 1992). All items in each POMS scale were retained as these scales have excellent reliability and validity. However, to create more accurate measures, factor score weights were used to obtain summary scale scores.

For the 12-item POMS Anger Scale, the factor weighted scale total gave a very strong scale reliability of .92. This variable was analysed for outliers and high scores were reduced to the 75th percentile, as recommended by Holmes-Smith & Rowe (1994). The items and factor score weights are listed in Table 1 of Appendix F. The resultant scale mean for Anger was 1.01 (SD = .76).

For the 9-item POMS Anxiety Scale, the factor weighted scale total gave a strong scale reliability of .85. This variable was analysed for outliers and high scores were reduced to the 75th percentile, as recommended by Holmes-Smith & Rowe (1994). The items and factor score weights are listed in Table 2 of Appendix F. The resultant mean for Anxiety was .64 (SD = .52).

For the 15-item POMS Depression Scale, the factor weighted scale total gave a very strong scale reliability of .94. This variable was analysed for outliers and high scores were reduced to the 75th percentile, as recommended by Holmes-Smith & Rowe (1994). The items and factor score weights are listed in Table 3 of Appendix F. The resultant mean for Depression was .48 (SD = .51).

6.12.2 Parenting. Initial measurement models for the PBI scales comprised two constructs: Care (consisting of Mother Care and Father Care) and Protection (consisting of Mother Protection and Father Protection). Results indicated a fundamentally
misspecified model. For example, the error variance of the Father Protection measure was negative, which is statistically impossible. Therefore, modifications to the model needed to be made.

Modification indices strongly suggested that a Mothering construct (consisting of Mother Care and Mother Protection) and a Fathering construct (consisting of Father Care and Father Protection) more accurately specified the model. Theoretically the amendment was considered justified because developmental theory supports this premise that adolescents at this age have a global experience of the parenting they receive from each parent rather than discriminating between more individual aspects of parenting (Berk, 1991). The revised model yielded $\chi^2(3, N = 185) = 32.18, p < .001, \chi^2/df = 10.73, GFI = .93, IFI = .88$, and RMSEA = .23. This model was unsatisfactory, with only one fit measure reaching an acceptable level (Byrne, 2001).

Next, the new congeneric Inhibition Scale was added into the model as the other parenting measure. The model yielded $\chi^2(5, N = 185) = 37.54, p < .001, \chi^2/df = 7.51, GFI = .93, IFI = .89$, and RMSEA = .19. Only one fit measure met the criteria. One modification was made, based on the modification indices. This modification made sense theoretically, with a correlation between the error variances of Mother Protection and Father Protection. Results yielded $\chi^2(4, N = 185) = 5.37, p = .251, \chi^2/df = 1.34, GFI = .99, IFI = .99$, and RMSEA = .04, fitting all fit criteria. This measurement model for parenting was a very strong model (Byrne, 2001), and is shown in Figure 6.1.
Figure 6.1. The measurement model for Parenting constructs.

*** p < .001.

6.12.3 Gender and Childhood Parental Loss. Gender consisted of only one indicator variable. Childhood Parental Loss consisted of two indicator variables: whether parents had separated and whether a parent had died. These two dichotomous items were collapsed, giving a possible range between 0 and 2. Since there should be minimal error in answering any of these questions, the error term was set at .01 and the regression weight was set at .99 for each latent variable, as recommended by Arbuckle and Wothke (1999).

6.13 The Structural Models

6.13.1 Strategies of model construction. MacCallum (1995) describes three strategies that researchers employ for model construction and development in empirical applications of structural equation modeling: strictly confirmatory, model generation,
and model comparison. In this research, a model of risk factors was developed using the model generation strategy, and then this model was compared with the two hypothesised models of risk factors, a direct and an indirect model, using the model comparison strategy.

Initially, a model generation strategy was used to develop a core model of risk factors, including parenting factors, Gender, Depression, and Suicidality. A model generation strategy was further used to develop a best-fitting extended model that incorporated personality traits and mood factors. Second, a structural model is developed, depicting hypothesised relationships between the latent variables, and provides an assessment of nomological validity. In the current research, the researcher began with the parenting variables, and continued to add one latent variable at a time to an evolving core model, guided by an hypothesised model and by theory. The relationships between the personality and mood factors were explored independently, and then incorporated into the core model, producing the extended model.

Each solution was evaluated for the purpose of modifying the model to improve its fit to the observed data. Parameters were added and/or deleted using the modification index (MI). The MI represents the improvement of the overall model fit that would be achieved if a certain parameter were introduced to or altered within the model. As emphasised by MacCallum (1995), theoretical bases were used for all model modifications in order to minimise the possibility of capitalisation on chance and overfitting of the data.

Intercorrelations between all measures used in the structural equation modelling analyses are given in Table 6.9. As with all SEM, analyses are based on covariance structures (Byrne, 2001).
Table 6.9

*Intercorrelations of model measures for the Experimental Group at Phase 1*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender(^b)</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Loss(^b)</td>
<td>-.022</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Poor Mothering</td>
<td>.013</td>
<td>.228**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Poor Fathering</td>
<td>-.132</td>
<td>.110</td>
<td>.512***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Inhibition</td>
<td>.252**</td>
<td>.080</td>
<td>.405***</td>
<td>.424***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Anger</td>
<td>.227**</td>
<td>.087</td>
<td>.270***</td>
<td>.317***</td>
<td>.517***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Anxiety</td>
<td>.232**</td>
<td>-.012</td>
<td>.224***</td>
<td>.345***</td>
<td>.586***</td>
<td>.659***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Introversion</td>
<td>.216**</td>
<td>.104</td>
<td>.359****</td>
<td>.346***</td>
<td>.615***</td>
<td>.360***</td>
<td>.456***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Impulsivity</td>
<td>.016</td>
<td>.227**</td>
<td>.044</td>
<td>.210**</td>
<td>.034</td>
<td>.177*</td>
<td>.061</td>
<td>.022</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Depression</td>
<td>.393***</td>
<td>.042</td>
<td>.335***</td>
<td>.427***</td>
<td>.686***</td>
<td>.741***</td>
<td>.756***</td>
<td>.599***</td>
<td>.075</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>11. Suicidality</td>
<td>.248**</td>
<td>.101</td>
<td>.375***</td>
<td>.475***</td>
<td>.539***</td>
<td>.434***</td>
<td>.426***</td>
<td>.435***</td>
<td>.086</td>
<td>.616***</td>
<td>1.000</td>
</tr>
</tbody>
</table>

*Note:* a: 1 = male, 2 = female; b: 0 = no separation or death, 1 = either separation or death, 2 = both separation and death.

* \( p < .05 \), ** \( p < .01 \), *** \( p < .001 \).
6.13.2 *The parenting factors and Depression.*  First, the three parenting factors (i.e., Poor Mothering, Poor Fathering, and Inhibition) were modeled as direct predictors of Depression, as hypothesised in the core model. This model yielded $\chi^2(6, N = 185) = 8.31, p < .001$, $\chi^2/df = 1.38$, GFI = .99, IFI = .99, and RMSEA = .05. However, the model was misspecified due to a negative regression weight on Poor Fathering, which is statistically impossible. At this point, exploratory analysis with SEM was used to identify the correct relationships between the parenting variables and Depression. A correlation between Poor Mothering and Poor Fathering was included, as a correlation between Mother Protection and Father Protection was already established in the measurement model (Figure 6.1). No other relationships between the variables were included in the model. Rather, the modification indices, based on theory, were used to establish the correct pathways. Three modifications were made.

The first modification placed a path from Inhibition to Depression. The second modification placed a path from Poor Mothering to Inhibition. A third modification placed a path from Poor Fathering to Inhibition, yielding $\chi^2(8, N = 185) = 10.24, p = .249$, $\chi^2/df = 1.28$, GFI = .98, IFI = .99, and RMSEA < .04. All goodness-of-fit measures met the fit criteria, giving a very strong model (Byrne, 2001). Each modification was consistent with Millon's (1969) theory that parenting influences personality. In the model, the parenting constructs generate Inhibition, consistent with Millon's theorized origins for his Inhibited Scale. The structural model for the parenting factor is shown in Figure 6.2.
Figure 6.2. The structural model for the parenting factors, Inhibition and Depression.

*p < .05, ***p < .001.

6.13.3 Gender. Gender was then incorporated into the model with a direct link to Depression, as predicted in the core model. This model yielded a $\chi^2(13, N = 185) = 27.96, p = .009$, $\chi^2/df = 2.15$, GFI = .96, IFI = .97, and RMSEA = .08. One modification was made. A path was included from Gender to Inhibition, yielding a $\chi^2(12, N = 185) = 16.26, p = .179$, $\chi^2/df = 1.36$, GFI = .98, IFI = .99, and RMSEA = .04. This path is supported by research showing females to have a more negative sense of self than do males (Garmezy, 1987; Garrison et al, 1991; & Rutter, 1987). All goodness-of-fit measures met the criteria, producing a very strong model (Byrne, 2001). This structural model is shown in Figure 6.3.
Figure 6.3. The structural model for the parenting factors, Inhibition, Depression, and Gender.

**\( p < .01 \), ***\( p < .001 \).

6.13.4 Childhood Parental Loss. Finally, Childhood Parental Loss was incorporated into the core model as a direct link to Depression, as hypothesised. This model yielded \( \chi^2(18, N = 185) = 33.29, p = .015, \chi^2/df = 1.85, \text{GFI} = .96, \text{IFI} = .97, \) and RMSEA = .07. All goodness-of-fit measures were acceptable, indicating strong fit (Byrne, 2001). In this model, however, Loss was not predictive of Depression. Rather, modification indices indicated that Loss was predictive of Poor Mothering. The changed status of Poor Mothering from an exogenous variable to a predicted or endogenous variable required the correlation between Poor Mothering and Poor Fathering to be remodeled as a directional path. The path from Poor Fathering to Poor Mothering was non-significant. By contrast, the path from Poor Mothering to Poor Fathering was significant. Therefore, the final core model showed that Childhood Parental Loss predicted Poor Mothering, which in turn predicted Poor Fathering. This model yielded \( \chi^2(18, N = 185) = 21.23, p = .268, \chi^2/df = 1.29, \text{GFI} = .97, \text{IFI} = .99, \) and RMSEA = .03.
All goodness-of-fit measures met the criteria, indicating a very strong model (Byrne, 2001). The model is shown in Figure 6.4.

Figure 6.4. The structural model for the parenting factors, Inhibition, Depression, Gender, and Childhood Parental Loss.

** p < .01, *** p < .001.

6.13.5 The core model. Suicidality was then incorporated to complete the core model, with a direct link from Depression to Suicidality as hypothesised. This model yielded \( \chi^2(25, N = 185) = 42.18, p = .017, \chi^2/df = 1.69, \text{GFI} = .95, \text{IFI} = .97, \text{and RMSEA} = .06 \). All goodness-of-fit measures met the criteria, indicating a very strong model (Byrne, 2001). One modification was made. A path was included from Poor Fathering to Suicidality, yielding a \( \chi^2(24, N = 185) = 26.36, p = .335, \chi^2/df = 1.10, \text{GFI} = .97, \text{IFI} = .99, \text{and RMSEA} = .02 \), meeting all fit criteria and producing an excellent model (Byrne, 2001). This pathway was supported by research which linked poor parental care with suicidality (Adam et al., 1994; Martin & Waite, 1994; Tousignant et
This model is shown in Figure 6.5.

Figure 6.5. The final core structural model of adolescent risk factors for Suicidality.

**p < .01, ***p < .001.

6.13.6 The mood and personality factors. Because the relationships between the mood and personality factors were uncertain from previous research, these relationships were initially explored in their own right. The four variables, Anger, Anxiety, Introversion, and Impulsivity, were modeled as intercorrelated in a fully saturated model, as recommended by Arbuckle and Wothke (1999). With non-significant pathways removed, the model yielded $\chi^2(2, N = 185) = .705, p = .703, \chi^2/df = .36$, GFI = .99, IFI = .99, and RMSEA = .00. Three fit indices fit the criteria, indicating an acceptable model (Byrne, 2001). The model is shown in Figure 6.6.
Figure 6.6. The structural model for the mood and personality factors.

Note. Nonsignificant pathways are shown with dotted lines.

* $p < .05$, *** $p < .001$.

The potential changed status of these variables in the developed model, from predictor variables to endogenous or predicted variables, required the investigation of path directions. Introversion significantly predicted Anxiety, and Anxiety significantly predicted Anger. Anxiety also significantly predicted Introversion, but due to a negative regression weight the path was eliminated (Byrne, 2001). Likewise, Impulsivity predicted Anger, but the path was eliminated due to a negative error variance, which is also not permissible (Byrne, 2001).

6.13.7 Gender, parenting, mood and personality factors. Gender and the parenting factors were then added to the mood and personality factors in order to investigate relationships between the two sets of constructs. Pathways between the two sets of constructs were determined from the modification indices that were deemed theoretically justifiable. First, Inhibition predicted Introversion. Second, Poor Fathering
predicted Impulsivity. Third, Childhood Parental Loss predicted Impulsivity. All of these paths are consistent with Millon's theory of personality (1969), which states that parenting factors affect personality. Fourth, Impulsivity was again found to predict Anger, but was now admissible because the error variance was no longer negative. Results yielded $\chi^2(41, N = 185) = 70.44, p < .01$, $\chi^2/df = 1.72$, GFI = .94, IFI = .95, and RMSEA < .07. All four goodness-of-fit measures met the criteria, indicating a strong model with very good fit (Byrne, 2001). This model is shown in Figure 6.7.

**Figure 6.7.** The structural model for Gender, parenting, mood, and personality factors.

** p < .01, *** p < .001.

6.13.8 Gender, parenting, mood and personality factors, and Depression. When Depression was next added to the model, pathways were included from Gender and Inhibition to Depression, as established in the previous core model. Results yielded
\( \chi^2(50, N = 185) = 180.60, p < .001, \chi^2/df = 3.61, \text{GFI} = .87, \text{IFI} = .86, \text{and RMSEA} = .12, \) a poor model meeting none of the fit criteria (Byrne, 2001). One modification was made, namely a path from Anger to Depression. The amendment was supported by research showing that Anger influences Depression (Kingsbury et al., 1999; Koslowsky et al., 1992), and yielded \( \chi^2(49, N = 185) = 98.06, p < .001, \chi^2/df = 2.00, \text{GFI} = .92, \text{IFI} = .95, \) and RMSEA < .08, a strong model fitting the four fit criteria (Byrne, 2001). This model is shown in Figure 6.8.

Figure 6.8. The structural model for Gender, parenting, mood and personality factors, and Depression.

* \( p < .05, \) ** \( p < .01, \) *** \( p < .001. \)

6.13.9 Gender, parenting, mood and personality factors, Depression, and Suicidality. Finally, Suicidality was incorporated into the model, with pathways included from both Depression and Poor Fathering to Suicidality, as were established in
the core model. The extended model yielded $\chi^2(59, N = 185) = 106.82, p < .001, \chi^2/df = 1.81$, GFI = .92, IFI = .95, and RMSEA < .06, a very strong model with the four goodness-of-fit measures meeting the criteria (Byrne, 2001). This model is shown in Figure 6.9.

![Diagram](image)

*Figure 6.9.* The structural model for Gender, parenting, mood and personality factors, Depression, and Suicidality: Model 1, an indirect model.

*p < .05. **p < .01. ***p < .001.

6.14 Model Comparison

Next, the developed model was compared with the two posited models. The two posited models in this research represented competing theoretical positions and were based on conflicting research findings. Model 1 proposed that all risk factors indirectly predicted Suicidality via Depression. Model 2 proposed that the mood and personality variables directly predicted Suicidality. The developed model best supported Model 1, in
that all risk factors (except Depression and Poor Fathering) indirectly predicted Suicidality. The developed model was, however, much more complex than Model 1.

In Model 1, it was hypothesised that only Depression would directly predict Suicidality, and that all other risk factors would directly predict Depression. In the developed model, Poor Fathering also directly predicted Suicidality. Furthermore, only Anger, Inhibition, and Gender directly predicted Depression. The other proposed antecedents to Depression indirectly predicted Depression via other factors.

Finally, the proposed intercorrelations in Model 1 between Parental Care, Parental Protection, Introversion, and Impulsivity became directional links in the developed model: Poor Fathering directly predicted Impulsivity, and both Poor Mothering and Poor Fathering indirectly predicted Introversion via Inhibition.

6.15 Location Differences

A between-groups multivariate analysis of variance (MANOVA) was used to evaluate the effect of location (regional versus rural) on all eleven measures (i.e., Mother Care, Father Care, Mother Protection, Father Protection, Inhibition, Anger, Anxiety, Introversion, Impulsivity, Depression, and Suicidality).

The significant global test was followed up by univariate F tests to establish which specific measures were significantly different between groups. The univariate F tests employed a Bonferroni critical value for significance of $F(1,183) = 6.7$, derived from an alpha level of .0045 for the eleven measures, as recommended by Tabachnick and Fidell (1989).

At the global level, there was a significant location effect between the measures: $F(11,173) = 1.89$, $p = .044$, Wilk's Lambda = .89, and partial eta squared = .11. When
the results for the dependent variables were considered separately using the Bonferroni adjustment, regional students reported significantly higher levels of Anger ($M = 1.24, SD = .74$) than did rural students ($M = .84, SD = .71$): $F(1,183) = 13.91, p = .000$, Wilk’s Lambda = 7.49, and partial eta squared = .07. Regional students also reported significantly higher Anxiety ($M = .78, SD = .55$) than did rural students ($M = .54, SD = .47$): $F(1,183) = 9.45, p = .002$, Wilk’s Lambda = 2.45, and partial eta squared = .05. Finally, regional students reported significantly higher Depression ($M = .59, SD = .51$) than did rural students ($M = .39, SD = .44$): $F(1,183) = 8.33, p = .004$, Wilk’s Lambda = 2.08, and partial eta squared = .04. It should be noted that the power is relatively low in these analyses (Cohen, 1988).
Chapter 7: Phase 1 Discussion

7.1 Overview

In Phase 1, guided by a hypothesised model, theory, and previous research evidence, a core model of risk factors for suicidal behaviour in Year-9 adolescents was generated (Aim 1). Second, guided by theory and previous research evidence, this research generated an extended model of risk factors for adolescent suicidality. This model was built incrementally through the addition of mood and personality factors to the previously developed core model. Third, the developed extended model was evaluated to determine whether the model primarily represented the risk factors as direct influences upon Suicidality or as indirect influences via Depression (Aim 3). Finally, differences in risk factors between adolescents living in regional versus rural areas of Victoria were explored (Aim 4).

In the core model, Inhibition and Female Gender functioned as hypothesized to indirectly predict Suicidality via Depression. However, the parenting constructs Poor Mothering, Poor Fathering, and Parental Loss did not directly predict Depression as expected, but indirectly predicted Depression via Inhibition. In the extended model, Anger directly predicted Depression as hypothesized but Anxiety, Impulsivity, and Introversion indirectly predicted Depression via Anger, rather than directly predicting Depression. Overall, the modeling results best supported an indirect model of risk factors for Suicidality via Depression; Poor Fathering alone contributed directly to Suicidality. As hypothesized, both levels of depression and perceived styles of parenting significantly affected reported levels of Suicidality in adolescents. Finally, students
living in regional Victoria reported significantly higher levels of Anger, Anxiety, and Depression than did students living in rural Victoria. The Discussion will proceed by addressing in turn: the core model, the extended model, the measurement models, differences between students living in regional and rural areas, and conclusions.

7.2 The Core Model

7.2.1 Depression. The core model hypothesised Gender and family factors (Care, Protection, Inhibition, and Childhood Parental Loss) as direct predictors of Depression, which in turn directly predicted Suicidality. The findings confirmed that Depression acts as the main direct predictor of adolescent Suicidality and supported previous research with sizeable US samples (Garrison et al., 1991; Rubenstein et al., 1989) and a large Australian sample (Martin et al., 1995). Students in the Rubenstein et al. and the Martin et al. studies were of a similar age to students in the current study, whereas those in the Garrison et al. study were two years younger.

Measures used to identify depression across studies also varied. Rubenstein et al. (1989) and Martin et al. (1995) used the Beck Depression Inventory (Beck & Steer, 1987), Garrison et al. (1991) used the Centre of Epidemiologic Studies Depression Scale (Radloff, 1977), and this study used the POMS (McNair et al., 1992). All studies, including the current research, used similar questions to measure suicidality. Therefore, the role of depression in predicting suicidality appears robust across various western cultures, an age range spanning eleven to nineteen years, and different measures of depression.

7.2.2 Parenting: Poor Mothering, Poor Fathering, and Inhibition. Results of the
initial core model demonstrated that the parenting factors had significant effects on Depression and Suicidality, as hypothesized, but in a different way than was originally modeled. Poor Mothering and Poor Fathering were indirect predictors of Depression via Inhibition rather than direct predictors as was hypothesized. Further features of the core model were that Poor Mothering predicted Poor Fathering, and that Poor Fathering predicted Suicidality. The obtained model supported findings from other research that Poor Mothering and Poor Fathering (more often represented by low Care and high Protection) correlate positively and significantly with high levels of depression and suicidality (Adam et al., 1994; Martin & Waite, 1994; Parker et al., 1995). However, the obtained model further explicates the relationships between parenting, depression, and suicidality.

Inhibition was the sole parenting factor that directly predicted Depression. The Inhibition construct was derived from the Inhibited Scale of the MAPI (Millon, 1969; Millon & Davis, 1993), a personality inventory for adolescents. Theoretically, Inhibition was chosen to complement the PBI measures, because it is construed to result from a parenting style that combines low Care and high Protection. Therefore, inclusion of the Inhibited Scale offered the opportunity to increase the reliability of the parenting construct. The two statements that best characterised the Inhibition construct were: “I often feel I’m floating around, lost in life” and “Others my age seem to have things together better than I do.” Inhibition, then, suggests a lack of direction and personal cohesion that adolescents may feel about themselves and their life.

Poor Mothering and Poor Fathering predicted Depression, via Inhibition. Parenting, then, appears to influence adolescents’ sense of direction and personal
cohesion, which in turn influences their level of depression. Kienhorst et al. (1992), in their study of adolescent suicide, did not model these parenting factors. Yet their results also demonstrated that those who attempted suicide reported significantly greater parental conflict, less parental support, greater emotional lability, and significantly greater negativity about the future than did non-attempters.

The role of Inhibition in the obtained core model supports Millon’s (1969) theory of personality, which posits that personality is shaped by the type of parenting an individual receives. The findings likewise support Bowlby’s (1969) attachment theory, which states that the essential factor for mental health is the experience in infancy and childhood of a warm and continuous relationship with one’s mother (or permanent mother-substitute). Bowlby contended that an insecure bond between mother and infant could impede the development of successful methods for dealing with life stressors and negative emotions, and produce an inability to experience security, autonomy, and self-worth. These features in turn could result in depression as the child matured. This model supports Bowlby’s contention that the bond between child and mother is important for the healthy development of the child. This model further demonstrates that the bond between child and father is equally important for healthy development.

The obtained core model also replicated the findings of Pantle et al. (1990) and Siemen et al. (1994) that adolescent depression is related to elevated scores on the MAPI Inhibited Scale. The current study obtained a strong relationship between Inhibition and Depression even though the congeneric Inhibition Scale comprised only five of the original sixteen short form’s questions. It may be concluded that this congeneric Inhibition Scale is a valid measure that offers better internal consistency reliability and
efficiency than the original. The obtained core model also supports Millon's (1969) finding and contention that the Inhibited personality type is strongly prone to depressive disorders. The relationship obtained was true both for Millon (1969), who used clinically diagnosed depressive disorders, and for this research, which assessed depressed mood by self-report. Therefore, the finding generalizes across both clinical and non-clinical samples.

Results also replicated the findings of other research that both low Care and high Protection are significantly related to high levels of depression (Martin & Waite, 1994; Parker et al., 1995). Martin and Waite assessed depression using the Youth Self-report (Achenbach & Edelbrock, 1987), Parker et al. used the Diagnostic Interview Schedule (Robins et al., 1981), and this research used the POMS (McNair et al., 1992). Findings from the current study taken together with these other studies suggest that the influence of perceived parenting on depression generalises across two western cultures (the US and Australia), various measures of depression, and an age range from fourteen years to adulthood.

Further, the obtained core model supports the high correlations obtained by others between low Care/high Protection and high levels of suicidality (Adam et al., 1994; Martin & Waite, 1994; Tousignant et al., 1993). Adam et al. used personal interviews to assess suicidality, Martin and Waite used the Youth Self-report (Achenbach & Edelbrock, 1987), whereas Tousignant and the current study used a self-report questionnaire. Variations of method in the cited studies and the current study suggest that the influence of perceived parenting on suicidality generalises across two western cultures (Canada and Australia), various measures of suicidality, and an age range from
twelve to nineteen years. However, findings from the obtained core model elucidate the manner in which Care and Protection are related to Suicidality, namely via Inhibition and Depression.

In a more detailed study of suicidality, Beautrais et al. (1999) used a group aged eighteen to twenty-four years to investigate the relationships between family factors, depression, and suicidality. She coalesced the PBI scales with childhood parental separation/death, and with childhood abuse as a single family factor. She also embedded major depression within a broad range of other psychiatric disorders (bipolar, anxiety, simple phobia, social phobia, alcohol and substance abuse, schizophrenia, anorexia, bulimia nervosa, and PTSD), and with previous suicide attempts, as a psychiatric disorder variable. Beautrais et al. found that family factors indirectly influenced attempted suicide via psychiatric disorders. The current study findings are consistent with the findings of Beautrais et al. in determining that family factors influence suicidal behaviours via depression.

Another feature of the obtained core model indicated that Poor Mothering influences Poor Fathering. One possible explanation is that mothers traditionally take a lead in parenting and may often model the parenting role for fathers. Therefore, a mother who is warm and promotes autonomy may encourage the father to do likewise. A mother who is cold and overprotective may similarly model this parenting role to fathers. Alternatively, the impact of perceived mothering on perceived fathering may result from greater time spent with the mother. An adolescent who experiences a mother as cold and discouraging of autonomy may simply transfer similar perceptions to the father.
The influences of mothering upon fathering may also indicate that the quality of the parental relationship impacts on the quality of parenting. If the parents are in an unsatisfactory relationship, then an unhappy mother may parent more poorly and communicate negative views of the father to the child. In turn, an unhappy father may absent himself from the family, or be more prone to express negative affect to the child. Certainly, findings from other research indicate that marital conflict and family dysfunction are contributing factors in levels of adolescent depression and suicidality (eg., Garrison et al., 1991; Goldney, 1981; Kienhorst et al., 1992; Kosky et al., 1990).

The obtained core model also indicated that Poor Fathering not only influenced Inhibition, but also directly predicted Suicidality. This aspect of the results suggests that those adolescents who perceive their fathers as colder and more controlling, irrespective of their resultant sense of direction and personal cohesion, are more likely to tell someone that they are going to suicide or to have a detailed plan of how they will commit suicide. This direct impact of Poor Fathering on Suicidality challenges Bowlby’s (1969) view that a father is not as important to the psychological well-being of a child as a mother. Tousignant et al. (1993) concluded that “the mother’s good care or positive attitude cannot make up for the father’s failure” (p. 260). The current model demonstrates that Poor Mothering directly impacts on Poor Fathering, and that both Poor Mothering and Poor Fathering strongly influence an adolescent’s sense of self and whether they display suicidal behaviours.

7.2.3 Childhood Parental Loss. The obtained core model confirmed that Childhood Parental Loss did affect Depression, but indirectly via Poor Mothering rather than by the direct link hypothesised. The lack of a direct link from Parental Loss to
either Depression or Suicidality was also reported by Martin et al. (1995), who found a significant correlation between loss and family dysfunction, and between family dysfunction and depression, but not between loss and depression or loss and suicidality. The implications will be addressed shortly.

Beautrais et al. (1999) coalesced parental loss with other family factors (i.e., Care, Protection, and abuse), and found both a direct and an indirect effect with Psychiatric Disorders, including Depression. Similarly, Garrison et al. (1991) and Rubenstein et al. (1989) found parental loss to be associated with suicidality, but loss was coalesced with Undesirable Life Events. Other studies (i.e., Benjaminsen et al., 1990; Brent et al., 1994; & Goldney, 1981) found a significant association between parental loss and suicidality, but only as a zero-order correlation. Although supportive of the current finding, these other studies did not model the complex relationships between parental loss, family factors, depression, and suicidality.

Findings from this study suggest that Childhood Parental Loss affects the perceived quality of mothering, which in turn affects both the perceived quality of fathering and the experience of a positive sense of direction in life. Generally when parents separate, the children remain with the mother. Therefore, her reactions to the separation are likely to impact on them more immediately than the father’s reactions. If a mother is stressed and unhappy, she is likely to be less caring and more demanding than previously. Also, an unhappy mother is likely to make negative contributions to the adolescent’s perception of the father. When adolescents have parents who are unhappy and less caring, the adolescents are likely to feel more personally fragmented and more negative about life in general. They are then apt to become depressed. As Kosky et al.
(1986, p. 528) stated, "If we are to predict potential suicidal behavior we should rather focus on the family interactions and be alerted by the presence of discord and hostility in the family." Therefore, it is the perceived quality of parenting, and not separation or divorce per se, that more directly affects depression in the adolescent.

7.2.4 Gender. Gender was found to affect Depression both directly and indirectly via Inhibition, its stronger link proceeding via Inhibition. The latter pathway indicates that females experience less sense of direction and personal cohesion than do males. One reason may be females' greater maturity at this stage of development (i.e., 15 years). It may be that they think more deeply about life issues, are more strongly affected by relationships, and are generally more aware of the implications of social and life issues. This heightened awareness would likely create a greater sense of personal turmoil. Biddulph (1997) reports that parents spend more time talking with girls than with boys, and that girls spend more time in conversation with each other than do boys. It would initially appear that their increased discussions would make girls more confident than boys because they are engaging in greater exploration of social concepts and ideologies. However, perhaps this discussion and increased awareness of life issues actually makes girls more insecure and "lost in life," as they also confront the wider implications of relationship problems, unemployment, family breakdown, terrorism, and similar issues.

An alternative interpretation is hormonal. Females begin experiencing hormonal changes and associated emotional extremes two years earlier than boys (Berger & Thompson, 1995). It may be that during adolescence, a female's sense of direction and personal cohesion are thwarted by their emotional lability. Studies have demonstrated that hormones do have an emotional impact (Susman, Dorn, & Chrousos, 1991).
Increasing hormonal levels cause the adolescent’s emotions to be aroused more rapidly than previously, and are also associated with shifts in extremes of emotions. However, an even more powerful influence on emotional change is the psychological impact the visible body change has on the individual adolescent (Nottelman et al., 1990; Brooks-Gunn & Reiter, 1990), accompanied by advances in cognitive growth. Increased cognitive abilities permit a new degree of self-scrutiny, often ruminating on how one is perceived by others. Females have been shown to be more self-critical than boys of their body weight, body type, hair, and other aspects of physical appearance (Berger & Thompson, 1995). Heightened emotional lability combined with increased self-consciousness may well leave females feeling insecure (i.e., “lost in life”) and believing that others their age have a better sense of where they’re going in life than they do.

Another interpretative possibility is that females in western society may simply feel freer to express negative affect than males. In our culture, females are encouraged to express their vulnerability and negative emotions, whereas males are often discouraged from expressing those same features. Thus, males may have felt less able to report any vulnerability, such as lack of direction and personal cohesion.

Gender was also found to directly predict Depression. The strongest descriptors of Depression were sad, hopeless, and helpless. The result accords with Garrison et al. (1991) and Pronovost et al. (1990), using US and Canadian samples respectively, who found that gender correlated significantly with Depression. By contrast, Martin et al. (1995) and Rubenstein et al. (1989), using Australian and US samples respectively, found no significant correlation between gender and depression.

All four studies used large populations of adolescents aged approximately eleven to
nineteen years, from three western countries. The main difference between the studies was the depression measure that was used. Garrison et al. (1991) and Pronovost et al. (1990) used the Centre of Epidemiologic Studies Depression Scale (Radloff, 1977), whereas Martin et al. (1995) and Rubenstein et al. (1989) used the Beck Depression Inventory (Beck & Steer, 1987). The current study used the POMS (McNair et al., 1992). The POMS and Centre of Epidemiologic Studies Depression Scale focus on sadness and hopelessness, both affective factors, whereas the Beck Depression Inventory also includes questions on negative cognitions and physical symptoms of depression. This difference in content suggests that adolescent females may report greater depressive affect, but not greater levels of depressive cognition or physical symptoms.

The reasons that females reported a higher level of Depression than did males may parallel the reasons for reporting higher levels of Inhibition. These reasons include females' increased maturity which encourages them to consider the wider implications of social issues, hormonal changes occurring at this age, or the greater freedom in our culture for females to express negative affect.

A further possible explanation for females reporting greater levels of depression than males is their greater experience of sexual assault. Weiss, Longhurst, and Mazure (1999) found that females are victims of sexual assault at least twice as often as males, and that victims of sexual assault have increased rates of depression. Reviewing a variety of studies, Cutler and Nolen-Hoeksema (1991) reported rates of childhood sexual assaults between 3 and 7% for males, and between 7 and 19% for females. Further, Zahn-Waxler (2000) found that abuse experiences can negatively alter children's and adolescents’ perceptions of themselves and others. Therefore, higher rate of sexual
assault in females may also explain the higher levels of Inhibition reported by females.

The current finding that Gender has an indirect link with Suicidality via Inhibition and Depression supports the findings of some others. Garrison et al. (1991), Martin et al. (1995), and Pronovost et al. (1990) all found a significant zero-order correlation between gender and suicidality. The current research also had a zero-order correlation of .25, \( p < .01 \), between Gender and Suicidality. By contrast, Pearce and Martin (1994a), and Rubenstein et al. (1989) did not find a significant zero-order correlation between gender and suicidality.

All studies used self-report items to measure suicidality, used a similar age group, and were conducted in western countries. One difference was that Rubenstein et al. (1989) did not ask about suicidal ideation, only self-harm and suicide attempts. All other studies asked about ideation and/or plans. This difference in suicidality measures does not explain why Pearce and Martin (1994a) did not find a gender effect, as they did ask about ideation. Nevertheless, the balance of evidence suggests that females do report greater ideation and more plans to suicide than do males. The advance offered by the current study was to determine that the gender link with Suicidality was mediated via Inhibition and Depression.

7.3 The Extended Model

When the mood and personality factors (i.e., Anger, Anxiety, Introversion, and Impulsivity) were added to the core model, the extended model primarily supported an indirect model of risk factors, but in a different way than was originally hypothesised. The added factors did not all directly influence Depression. As proposed, Anger directly
influenced Depression but not Suicidality. However, Anxiety and Impulsivity indirectly affected Depression via Anger. One step further removed, Introversion indirectly influenced Anger via Anxiety. Further, the model identified precursors for the added personality factors. Inhibition directly predicted Introversion. In addition, Poor Fathering and Childhood Parental Loss directly predicted Impulsivity. Parenting constructs, then, were shown to be precursors of the personality constructs.

The extended model established two main pathways to Depression and Suicidality. In one pathway, the parenting factors and Gender influenced Depression and Suicidality via Inhibition. In the second pathway, the mood and personality factors influenced Depression and Suicidality via Anger. In this second pathway, the parenting factors continued to exert an influence on Depression indirectly through the personality factors, Introversion and Impulsivity.

7.3.1 Anger. Results of the extended model demonstrated that, of the personality traits and mood factors, only Anger contributed directly to Depression and hence indirectly to Suicidality. This finding supports previous research that found a significant correlation between Anger and Suicidality (Boergers et al., 1998; Goldston et al., 1996; Kashani et al., 1989; Kingsbury et al., 1999; Stein et al., 1998). Although Boergers et al. suggested that Depression was a mediating factor between Anger and Suicidality, none of these studies explicitly modeled the relationships between Anger, Depression, and Suicidality simultaneously. This current research demonstrated that Depression is indeed a mediating factor between Anger and Suicidality.

The adjectives that best characterised Anger were annoyed, bitter, and furious. The extended model indicates that adolescents who feel annoyed, bitter, or furious are more
likely to feel sad and hopeless, which in turn leads to thoughts of suicide and plans to kill themselves. When a person feels angry and annoyed, they tend to feel thwarted. Boergers et al. (1998) determined that over half of adolescents in their study attempted suicide for intrapersonal reasons, escaping from an unbearable state of mind from which they could find no way out. Feeling hopeless and impotent to alter a situation, their thoughts turned to suicide. However, Boergers et al. also found that a quarter of their adolescents attempted suicide for interpersonal reasons, seeking either acknowledgement by demonstrating how desperate they felt, or revenge by inducing guilt in others. Feeling either desperate or vengeful, adolescents may see their only solution as revealing an intention or actually attempting suicide. Anger, then, can be directed toward either the self (intrapersonal reasons) or towards others (interpersonal reasons). Both may lead to suicidal behaviour as a solution. In each situation, however, depression mediates between anger and suicidality.

7.3.2 Anxiety. Anxiety indirectly contributed to Depression via Anger, indicating that Anger acts as a mediating factor between Anxiety and Depression. The adjectives that best characterised Anxiety were on edge, nervous, and panicky. Therefore, feeling on edge and nervous leads to feeling annoyed and bitter, which in turn may lead to increased levels of depression and suicidality. The model developed in this research specifically identifies the pathway from Anxiety to Anger. It was Anxiety that influenced Anger, and not the reverse. The identified pathway from Anxiety to Anger is consistent with attachment theory. According to Bowlby (1980), attachment offers the infant a sense of security due to the presence of a primary caregiver. When a caregiver is not present or is unresponsive to a child's needs, anxiety arises in the child. A child may then give an angry response, replacing a more passive strategy with an active one, in a
further attempt to elicit a response and thereby reduce anxiety. If no response happens, the child may then feel helpless.

Anxiety was found to substantially affect Anger. One possible reason for the high impact of Anxiety on Anger may arise from the high intercorrelation between these two POMS scales (McNair et al., 1992). Nevertheless, these results support findings in previous research that Anxiety is correlated with Anger, Depression, and Suicidality (Beautrais et al., 1999; de Wilde et al., 1993; Goldston et al., 1996; Stein et al., 1998), even though different measures were used. The measures used by both Goldstein et al. and Stein et al. were the State-Trait Anxiety Inventory (Kienhorst et al., 1987) and the Beck Depression Inventory (Beck & Steer, 1987). Beautrais et al. used the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1970) and de Wilde et al. used a semi-structured interview.

7.3.3. Introversion. In the extended model, Introversion predicted Anxiety. The descriptives which best exemplified Introversion were “I often feel left out of things socially” and “I often think I am not wanted by others.” Introversion in the current research, then, indicates a sense of social isolation that leads to greater anxiety.

This result supports the findings of Colson (1972) and Kreitman (1977) who also found a significant correlation between introversion and suicidal behaviour. Further, the extended model supports attachment theory (Bowlby, 1980; Fonagy, 2001; Sloman et al., 2003) and expands previous findings by specifying another pathway from poor parenting to suicidality via inhibition, introversion, anxiety, anger, and depression. This progression suggests that attachment problems may have a cumulative effect on a child. Parental absence, whether physical or emotional, influences an adolescent’s sense of
personal cohesiveness and future direction. In turn, this sense of "being lost in life" leads to feeling socially unwanted. Thus an adequately developed sense of personal identity appears to be a key feature for effective peer acceptance. Inhibition, in fact, predicted 80% of the variance in Introversion, indicating a very strong influence. Returning to the progression, adolescents who feel socially alienated may feel on edge and experience increased arousal. This anxiety may lead them to feel angry about the injustice of the situation. Unable to alter the situation, they may become hopeless. Depression may then lead them to thoughts of suicide as a solution.

Further, the model supports the work of Fonagy (2001) and Sloman et al. (2003) who add that when a child experiences an insecure attachment through intimidating or neglectful parenting, they are less able to deal with negative emotions, and are more likely to struggle at coping with setbacks and defeats in later life. Children who experience poor parenting, then, are more apt to feel "lost in life" (i.e., Inhibition) and socially isolated (i.e., Introversion). Unable to deal with their negative affect, they may become anxious then angry and become more prone to depression.

7.3.4 Impulsivity. Impulsivity also indirectly contributed to Depression via Anger, indicating that Anger also acts as a mediating factor between Impulsivity and Depression. The descriptive that best exemplified Impulsivity (as a negative loading) was "I like to follow instructions and do what others expect of me." Thus, results of the extended model indicate that adolescents who are more uncooperative tend to be more annoyed and bitter, which in turn contributes to increased depression and suicidality. This is a second pathway through Anger to Depression and Suicidality, which does not involve Anxiety.
It may be that students who are obstructive will attract animosity from others and react to that with bitterness. Perceiving the world as harsh, rejecting, and uncaring, may lead such students to a sense of helplessness and hopelessness. This, in turn, may lead them to believe that life is not worth living, and that it may be better to end it, as suggested by Boergers et al. (1998).

Results supported the findings of Kingsbury et al. (1999) and Koslowsky et al. (1992) that Impulsivity is significantly correlated with Suicidality. Further, this pathway from Impulsivity to Anger to Depression to Suicidality replicated the results of Koslowsky et al., who also used structural equation modeling. With a sample of Israeli soldiers aged under twenty-two years, Koslowsky et al. also found that Impulsivity was a precursor of Anger, Anger was a precursor of Depression, and Depression was a precursor of Suicidality.

Measures used by Koslowsky et al. (1992) were the Symptom Check List Depression Scale (Derogatis, 1979), self-devised measurement scales of impulsivity and suicide risk developed by Plutchik and van Praag (1986), and an anger arousal measure developed by Siegal (1986). The Impulsivity Scale consisted of items that focused more on one's tendency to engage in spur-of-the-moment behaviour and lack of control rather than the lack of cooperation tapped in the current study. However, considering the disparities in population, age, culture, and measures used in the two studies, the similarity of results represents strong support for such a model.

Koslowsky et al. (1992) described impulsivity as a trigger variable for anger, depression, and suicidal behaviour. Plutchik and van Praag (1986) suggested that various losses and threats increase the aggressive impulse. If this aggressive impulse is
to be turned into action, however, it requires a goal object, and this can occur in two
different ways. An individual may direct the aggressive impulse inwards leading to
depression and feelings of hopelessness that predispose a suicide risk. Alternatively, an
individual may direct the impulse outwards, resulting in a risk of violence to others. The
current research did not explore violent behaviour per se. The current model supports
the premise of Plutchik and van Praag that perceived threat can generate an aggressive
impulse that may be turned inward and lead to depression and suicidality.

The extended model also identified precursors to Impulsivity. Poor Fathering and
Childhood Parental Loss directly predicted Impulsivity, and Poor Mothering indirectly
predicted Impulsivity via Poor Fathering. That parenting factors influenced Impulsivity
supports Millon’s theory of personality (1969, 1981). It seems that either parental loss or
cold and over-controlling parents can result in a less cooperative adolescent. When
parents separate, adolescents probably experience increased emotional turmoil and less
parental care. As attachment theory hypothesises (Bowlby, 1979), without a warm and
disciplined environment in which to develop a positive and strong ego structure, when
negative experiences happen, the adolescent may easily become confused, more
insecure, and rebel.

7.4 The Measurement Models

7.4.1 PBI Measures. It was initially hypothesised that the PBI measures would
comprise two individual constructs, Care and Protection. Further, each construct would
significantly predict Depression. However, structural equation modeling showed the
core constructs as Mothering (comprised of Mother Care and Mother Protection) and
Fathering (comprised of Father Care and Father Protection).

The factorial arrangement indicated that adolescents saw each parent more globally in positive and negative terms rather than discriminating between the Care and Protection afforded by each parent. At least two explanations are possible. First, the four PBI Care and Protection Scales intercorrelated moderately between .31 and .57, possibly indicating that Care and Protection comprise a common factor. In this case, item level analysis may have been preferable to analysis of total scale scores because any overlap of items between scales would have been identified and partialled out. However, comparison of PBI data with other studies would then be lost.

Alternatively, it may be that Year-9 students still lack the cognitive ability to discriminate different aspects of parenting. Developmental theory suggests that during the mid-adolescent years, cognitive abilities are changing and improving, but discrimination abilities are not yet fully developed (Berk, 1991). Adolescents at this age may simply have an overall sense or feeling about each parent.

The measurement model indicated that both Poor Mothering and Poor Fathering were more strongly defined by the Care measure than by the Protection measure. The parenting constructs, then, represented warmth more than control. Each was a significant indirect predictor of subsequent depression and suicidality. Similarly, in their Australian sample, Martin and Waite (1994) found that Care was more highly correlated with both Depression and Suicidality than was Protection. Also, in their U.S. sample, Parker et al. (1995) found that Care was more highly correlated with Depression than was Protection.

7.4.2 The congeneric models. The three MAPI scales (i.e., Introversive, Impulse Control, and Inhibited; Millon, 1969) were developed from theory rather than factor
analysis and thus shared overlapping items. Retention of overlapping items would have spuriously inflated associations between the three scales, introducing inaccuracies into the structural equation models. Further, according to Holmes-Smith and Rowe (1994), a preferred measure in structural equation modeling is to form a one-factor congeneric model because it creates a more precise measurement model of the latent variable. For these reasons, and because the full MAPI scales were not widely used in suicide research, congeneric modeling was used at the item level to redefine the scales.

The content of both the original MAPI Inhibited Scale and the 5-item congeneric scale included questions on a sense of personal cohesion and one's direction in life. The internal consistency reliability of the congeneric Inhibition Scale remained very good. The bivariate correlation between the congeneric Inhibition Scale and the POMS Depression Scale (McNair et al., 1992) was .69, p<.001, demonstrating that the congeneric scale was strongly related to depression, as Millon (1969) found for the full scale.

The content of the original MAPI Introversive Scale was much broader than the 5-item congeneric scale. The original MAPI scale included questions on sociability, ability to reflect, strong emotions, and impulsivity. By contrast, the congeneric scale focused more specifically on sociability. This short form measure had content that better reflected the dimensions of extraversion/introversion represented by the NEO PI-R Extraversion Scale (Costa & McCrae, 1992) and the Eysenck Extraversion Scale (Eysenck & Eysenck, 1970), both scales of which are considered highly valid. The internal consistency reliability of the final congeneric Introversion Scale was much improved over the original MAPI scale.
The content of the original MAPI Impulse Control Scale was also much broader than the 3-item congeneric scale for Impulsivity. The original MAPI scale included items emphasising anger, guilt, nonconformity, and one’s ability to reflect before acting. By contrast, the congeneric scale focused more specifically on lack of cooperation and nonconformity. This short form measure is quite different in content to the NEO PI-R Scale for Deliberateness (Costa & McCrae, 1992), which emphasizes impatience, carelessness, and moodiness. The internal consistency reliability of the congeneric Impulsivity Scale was not as good as that of the original MAPI Impulse Control Scale. Although the reliability of the Impulsivity scale was just adequate, one could not use the longer scale due to the sensitivity of structural equation modeling to item overlap. The items were more cohesive in the congeneric model, and it was inappropriate to include questions on anger, which formed a separate measure.

7.4.3 The Suicidality measure. The current research used eight items to tap suicidal behaviour, including ideation, general plans, detailed plans, and threats of suicide. For greater precision, a one-factor congeneric model was formed for the suicidality measure. The internal consistency reliability of the Suicidality scale was very strong. As hypothesised, all eight items contributed significantly to the measurement model. Further, a cumulative arrangement similar to that used by both Pearce and Martin (1994a) and Martin et al. (1995) was strongly supported. Low-risk items (e.g., “Sometimes I feel life is not worth living.”) yielded a low factor score weight for the Suicidality construct. High-risk items (e.g., “I have a detailed plan for how to end my life.”) had a high factor score weight. The one exception to the cumulative arrangement was that the item deemed as highest risk (e.g., previous suicide attempt) yielded only the
second highest factor score weight. This minor exception is probably due to the very few actual attempts reported by students.

The measurement model supported an important differentiation between having a *detailed* plan and having a *general* plan to end one’s life. As with previous research (Martin et al., 1995; Pearce & Martin, 1994a; Shochet & O’Gorman, 1995), this research demonstrated that having a detailed plan to end one’s life was the item of greatest risk, as evidenced by the highest factor score weight. This result supports the recommendation of Shochet and O’Gorman (1995) that a detailed plan to end one’s life is the strongest indicator of suicidal behaviour. By contrast, a general plan to end one’s life yielded a moderately high factor score weight, indicating only moderate risk.

It is worth noting that approximately 30% of the students who affirmed a detailed plan or general plan to end their life had actually misunderstood the items. When followed up, they reported interpreting the items as having a *career* plan for the rest of their life (a plan to end my life). This feature raises questions about the credibility of results reported in other studies where endorsement of these items with similar wording was not followed up and clarified. It is possible that the previously reported percentages of students planning suicide were inflated.

Threats of suicide (i.e., revealing to someone else that one is considering suicide) yielded the third highest factor score weight in the Suicidality measure. This result supported the findings of Pfeffer (1986) and Ritter (1990) that revelation to another person is a high-risk activity for attempted suicide. Unlike Smith and Crawford (1986) who did not consider threats of suicide in their continuum, the current findings emphasise the importance of including a suicide threat item in any measure of
suicidality. Also, it is vital to realize that any adolescent who tells another person that they intend to suicide, should be taken extremely seriously.

7.5 Location Differences

A further aim of this research was to explore regional versus rural differences in adolescent risk factors. Location was not included as a risk factor in the structural equation models due to limited sample size. Instead, multivariate analyses of variance were used to assess location differences. Results showed that students in the Geelong region reported significantly higher scores for Anxiety, Anger, and Depression. This outcome is surprising as 1999 Australian Bureau of Statistics findings indicate that levels of suicidal behaviour, at least, are highest in rural areas, and in the current model, anxiety, anger, and depression operate as antecedents of suicidality. One may then expect levels of anxiety, anger, and depression to be higher in rural areas than in regional areas, rather than the reverse.

It would seem that Geelong in regional Victoria may be a unique entity, neither urban nor rural. Indeed, having levels of population, area, and facilities between that of urban and rural Victoria, for adolescents it may offer the worst of both worlds. Regional Victoria may possess neither the relative safety of rural Victoria nor the diversity of activity of urban Melbourne. Alternatively, the significantly higher levels of anxiety and anger reported in this study may be idiosyncratic to the Geelong region. In the late 1980’s, Geelong experienced a major financial crisis with the crash of the Pyramid Building Society. Geelong region adolescents may have experienced the effects of very upset and depressed parents under financial hardship, resulting in poorer parenting and
increased separation. This crisis may still be having its impact today.

Results from the extended model suggested that the higher anxiety, anger, and depression scores may flow from perceptions of poorer parenting leading to greater Inhibition. In turn, greater Inhibition may lead directly to greater Depression, or indirectly to greater Introversion, Impulsivity, Anxiety, and Anger. Although no other measures reached significance, regional adolescents consistently reported higher mean scores on all risk measures than did rural adolescents. It may be that with a larger sample, a significant difference in other factors would also be found.

7.6 Conclusions

The developed model helps to elucidate the relationships between selected family, personality, and mood factors implicated in adolescent suic idality. Further, the model offers clear support for both Attachment Theory (Bowlby, 1969) and Millon’s theory of personality (1981), in that the quality of parenting strongly influences an adolescent’s sense of well-being. The extended model demonstrates that family factors directly influence personality factors, which in turn influence mood factors, including depression, which then influence suicidality.

Overall, the results best supported an indirect model of risk factors for Suicidality via Depression. The extended model established two main pathways to Depression and Suicidality in adolescents. In the first pathway, parenting factors and Gender contributed to Depression and Suicidality via Inhibition. As stated by Bowlby (1969), parenting was shown to influence children’s mental health. Specifically, poor mothering and poor fathering, and not just poor mothering, resulted in lack of personal cohesion and future
direction (i.e., Inhibition), hopelessness and helplessness (i.e., Depression), and suicidal behaviours.

In the second pathway, personality factors influenced mood factors that contributed to Depression and Suicidality via Anger. Further, parenting factors acted as the antecedents to the personality factors, contributing to Depression indirectly through the personality factors, Introversion and Impulsivity. Both pathways affirm the importance of the parenting factors as antecedents to Suicidality. This model clearly supports Millon's theory (1981) that styles of parenting influence childrens' personalities.

Further, the pathways can be construed as evidence for the influence of secure and insecure attachment patterns. Good parenting during infancy, exemplified by a warm, caring relationship with the caregiver, leads the child to develop an internal working model of relationships with positive expectations for intimacy and care from others (Fonagy, 2001; Main, 1995). A secure attachment between child and caregiver is formed, leading to healthy cognitive and affective patterns that enable the child to deal with negative life experiences. The model indicates that adolescents with a secure attachment form higher levels of inner cohesion and direction, and experience lower levels of social isolation, impulsivity, anxiety, anger, depression, and suicidality.

By contrast, cold and over-controlling parenting leads to insecure attachment. In this instance, the child forms a working model of relationships characterised by mistrust, anxiety, anger, and lack of autonomy (Main, 1995). This study confirms other findings that adolescents with insecure attachment exhibit higher levels of depression and suicidality (Adam, Sheldon-Keller, & West, 1996; Allen et al., 1996; Toth & Cicchetti, 1996).
Further, this study adds support to the association found by Lipsett and Mitnick (1991) between insecure attachment patterns and the two types of depression, anaclitic and introjective. Anaclitic depression develops from disruptions in interpersonal relationships, and is characterised by feelings of loneliness, helplessness, and weakness (Blatt & Maroudas, 1992). Being dependent on others, and fearing abandonment, these individuals may rebel and become uncooperative when support from others is not forthcoming. This behaviour is shown in the paths from Poor Mothering and Poor Fathering through Impulsivity and Anger to Depression, and exemplifies ambivalent attachment.

Alternatively, Introjective depression develops from disruptions in an effective and essentially positive sense of self (Blatt & Maroudas, 1992), and is characterised by self-criticism and feelings of unworthiness and inferiority (Blatt, D’Afflitti, and Quinlan, 1976). These individuals strive for excessive achievement, and depression is most likely to develop in response to perceived achievement failure or lack of control over their environment. This behaviour is shown in the paths from Poor Mothering and Poor Fathering through Inhibition to Depression, and exemplifies avoidant attachment. These adolescents express a lack of personal cohesion and future direction in life.

How a child is parented, how warm and secure the parental attachment, does affect the adolescent's personality and emotional health in later years. Effective interpersonal relationships with others appear to stem from our initial parenting and the bond which is formed in the earliest years of the parent-child relationship. Further, those with poor social relationships, whether of an obstructive or alienated nature, display more vulnerability to suicidal behaviour.
Chapter 8: Phase 2

Introduction

8.1 Overview

Based on theory and using structural equation modeling (SEM), Phase 1 developed a best-fitting model of risk factors for suicidal behaviour in Year-9 adolescents. Variables included Gender, family factors, personality traits, mood factors, and Suicidality. Results supported an indirect model of risk factors for Suicidality that exerted their effects via Depression. At the theoretical level, results supported both Attachment Theory (Bowlby, 1969) and Millon’s theory of personality (1981). The extended model established two main pathways to Depression and Suicidality in adolescents. In both established pathways to Suicidality, parenting factors operated as antecedents to personality factors that in turn influenced negative mood states. Consistent with Bowlby (1969), parenting was shown to influence children’s psychological well-being. Consistent also with Millon’s theory (1981), this model demonstrated that styles of parenting do appear to influence adolescent personality.

In Phase 1, models underwent considerable development based upon the initial proposed model. It is important to note that, in SEM, alternative models may fit the data equally well (Anderson & Gerbing, 1988). Also, in the use of sequential strategies such as model generation and the use of modification indices, as were used in Phase 1, the order in which amendments were implemented may influence the developing model (Farrell, 1994). Therefore, it is important to assess the stability of the developed model over time. For this phase, a one-month time frame was chosen to reassess the obtained models for the same sample.
Simultaneously, the establishment of baseline measures for risk factors in Phase 1 afforded the opportunity to evaluate the impact of a web-based intervention for reducing levels of risk factors involved in adolescent suicidality. Before describing the specific intervention used in the current study, a range of strategies to prevent adolescent suicide will be reviewed.

8.2 Short-term Prevention Strategies

During the past decade there has been increased interest in suicide prevention strategies for adolescents, and in help-seeking behaviour by adolescents due to financial or geographical constraints (eg., Offer, Howard, Schonert, & Ostrov, 1991; Rickwood & Braithwaite, 1994). Only a limited number of distressed adolescents obtain counseling support from mental health professionals. Other adolescents are simply reluctant, or even resistant, to receiving help from others. Therefore, alternative strategies have been tried by governments, community groups, schools, and health professionals. These strategies have included parenting programs for parents of adolescents (eg., Maine, Shute, & Martin, 2001), peer support groups for adolescents (eg., Eggert, Thompson, Randall, & Pike, 2002), educational programs for adolescents focusing on cognitive-behavioural coping skills (eg., Puskar, Sereika, & Tusaie-Mumford, 2003), and investigation of the internet as a resource for adolescents (eg., Christensen, Griffiths, & Jorm, 2004; Gould, Harris, Lubell, Kleinman, & Parker, 2002).

Exploring suicide prevention through parental education, Maine, Shute, and Martin (2001) evaluated the effects of an educational video (Youth Suicide; Martin, 1997) on parents' knowledge of suicidal signs, response to suicidal statements, attitude toward suicide, and intention to help suicidal young people. The main phase involved 84
females and 38 males living in South Australia who had no experience of suicide within the family. The video content addresses issues within the home and school environments from an adolescent's perspective, and illustrates difficult relationships with parents and peers which potentially influence young people to consider suicide.

Parental knowledge of suicidal signs was tested using a questionnaire consisting of eleven items derived from empirically validated data applicable to the Australian population. Parental responses to statements about suicide were assessed using The Suicide Intervention Response Inventory (Neimeyer & MacInnes, 1981), which assesses the skill to select appropriate responses for hypothetical helping scenarios involving potentially suicidal individuals. Attitude to suicide was assessed by a modified version (Leane & Shute, 1998) of the Suicide Opinion Questionnaire (Domino, Moore, Westlake, & Gibson, 1982). The authors also used a self-devised 3-item questionnaire to measure intentionality, as no scale was available. Results indicated that knowledge of suicidal signs, appropriate parental responses to suicidal statements, and parental intention to help young people all improved significantly after viewing the video (Maine et al., 2001).

Combining peer support with coping skills training, Eggert, Thompson, Randall, and Pike (2002) used a sample of 341 volunteer potential school drop-outs in the northwestern US aged 14 – 19 years. Participants in Groups 1 and 2 were given a 2-hour assessment interview, a 2-hour counseling session, a brief session to deliver empathy and coping skills training, and a social network connection to a favourite teacher. The High School Questionnaire of Experiences (Eggert, Herting & Thompson, 1995) was used to measure suicide risk and depression. Participants in Group 2 were also taught cognitive-behavioural coping skills (CBT) in twelve 1-hour group sessions. Group 3, the Control
Group, received only a 30-minute interview plus a social network connection. Results showed that suicide risk levels and depression decreased significantly for all groups, and that they decreased significantly more for Groups 1 and 2 than for Group 3. Greater information and minimal coping skills training was better than a little information and no training, but no significant benefit was found for the extended CBT training.

In another research study, Puskar, Sereika, and Tusaie-Mumford (2003) investigated the short-term effectiveness of a group-administered cognitive-behavioural intervention to teach coping skills to young people. Participants were 89 rural adolescents in the US with a mean age of 16.0 years, 82% female, and with no history of a death of a family member or friend. Depression was measured using the Reynold’s Adolescent Depression Scale (Reynolds, 1986), and coping strategies were measured by the Coping Response Inventory – Youth (Moos, 1993). Students received ten sessions to teach them coping skills, based on the Teaching Kids to Cope Program (Puskar, Lamb, & Tusaie-Mumford, 1997). Follow-up testing occurred immediately following the program. A control group was also given baseline testing at pre-intervention and after 10 weeks. Posttest depression scores were significantly lower for the intervention group than for the control group.

Gould, Munfakh, Lubell, Kleinman, and Parker (2002) performed a survey to investigate whether adolescents accessed the internet for help when they felt sad or stressed. Participants were 519 students aged 13 to 19 years in six New York State high schools. A self-report questionnaire was used which included the Beck Hopelessness Scale (Beck et al., 1974) and a modification of Offer’s Mental Health Utilization Questionnaire (Offer et. al., 1991).

Results showed that 18% of participants used the internet as a help-seeking device,
a similar percentage to those using mental health professionals (21%) or school counselors (22%). The most common supports were friends (over 80%) or parents (79%). Those youths who sought help on the internet reported significantly higher levels of hopelessness and mental health problems than did those students who did not use the internet. Gould et al. (2002) concluded that while the internet was not generally used as a substitute for other sources of help, the internet was used as an adjunct to other forms of help, especially by high-risk adolescents.

Investigating the effectiveness of two internet sites to reduce depression in the general population, Christensen, Griffiths, and Jorm (2004) used a randomised controlled trial with a community sample in Canberra, Australia. Participants were 150 men and 375 women with a mean age of 36.4 years randomly selected from the electoral rolls, and who were not receiving clinical care. Participants were allocated to one of three groups and were contacted by lay interviewers weekly for six weeks. Group 1 were given assignments on the internet site BluePages (http://bluepages.anu.edu.au), which provides evidence-based information (at eighth grade reading level) on depression and its treatment. Group 2 were given assignments on the internet site MoodGYM (http://moodgym.anu.edu.au), which offers cognitive behaviour therapy for the prevention of depression. BluePages and MoodGYM (currently accessible via Reach Out!, but not at the time of data collection for this study) are both available freely on the world wide web. A Control Group received an attention placebo, providing weekly contact to discuss lifestyle factors such as exercise, education, and health habits. Radloff’s (1977) self-report depression scale was used to measure depressive symptoms pre- and post-intervention. Results found that both BluePages and MoodGYM significantly reduced symptoms of depression after 8 weeks compared with the Control
Group (Christensen et al., 2004). Those participants most at-risk demonstrated the greatest improvement.

One weakness of the above studies was that they were not always able to identify which factors in particular influenced the outcomes, or for whom the interventions worked best. In the Eggert et al. (2002) study, both Groups 1 and 2 received an assessment interview, counseling, coping skills training, and a support person. It is unclear which interventions were effective, or for which students a particular intervention was the most helpful. Puskar et al. (2003) demonstrated a significant decrease in depression with coping skills training, but did not explore whether the decrease was greater for high-risk adolescents. Also, most studies were not able to include long-term follow-up in their experimental designs and, therefore, the maintenance effects of the interventions are unknown. The current research will address these issues in its experimental design.

Although there are difficulties in testing the effectiveness of suicide prevention strategies with adolescents, results indicate that there may be significant benefits to many of these interventions for young people. The findings of Gould et al. (2002) and Christensen et al. (2004) suggest that the internet is a potential source of help to adolescents for decreasing depression and suicidality. With the Internet’s growing accessibility and students’ increasing propensity to use the Internet, it is important to further investigate the effectiveness of interventions through this delivery method as a prevention strategy for adolescent suicidality.

8.3 The Reach Out! Internet Site

The Internet site chosen for this study was Reach Out! (www.reachout.asn.au), one
of the projects developed by the Australian government between 1995 and 1999, with support from JJJ radio and the Inspire Foundation, as a prevention strategy for youth suicide. Its specific aim was to assist young peoples’ negative mood and improve their psychological well-being. The current phase of this study introduced the Reach Out! site to all participants, and performed short-term follow-up testing to evaluate the effectiveness of this site as a suicide prevention strategy for adolescents.

Reach Out! offers multiple forms of assistance about what can be done when an adolescent feels down. Fact sheets on Reach Out! offer information about depression, explaining how thoughts, feelings, and behaviour can create negative moods, and suggest ways of coping with negative feelings, such as talking with someone who can be trusted. Personal stories of both famous and ordinary people offer role models and their strategies to overcome depression. The Scream It sector allows young people to write about distressing experiences, rocket negative emotions into space, and thereby, reduce emotional and physiological stress by producing cognitive change (Pennebaker & Graybeal, 2001). The site sector Dream It builds hope and optimism by encouraging young people to write their dreams for the future. Road maps of most municipalities in Australia provide local contacts where professional assistance may be received.

In terms of the model established in Phase 1, then, the web strategies were likely to exert effects at the points subsequent to the parenting factors, where the personality factors began operating. Dream It offers hope and optimism to counter introversion and inhibition. The fact sheets on the site suggest ways of making friends (i.e., overcoming introversion) and getting along with others (i.e., overcoming impulsivity). Such improvements directed at the personality factors may flow on to improve mood factors. However, the fact sheets also offer specific suggestions for overcoming negative mood,
addressing anger, anxiety, depression, and suicidal ideation. *Scream It* is a practical way of reducing negative emotion, and the personal stories offer strategies to create a sense of well-being and overcome negative moods, including anger, anxiety, inhibition, and depression.

8.4 Aims

Phase 2 sought to (1) replicate the model established at Phase 1 over a one-month period, and (2) investigated the possible short-term impact from a psychoeducational prevention strategy upon the baseline measures of risk factors for adolescent suicidality. It was hypothesised that the best-fitting models of suicidality (i.e., core model and extended model) established at Phase 1 would fit equally well for the data collected at Phase 2. Further, it was hypothesised that experience with the *Reach Out!* internet site activities would significantly reduce participants’ reported levels of all personality and mood factors, and Suicidality. Note that high values on all measures represent greater risk.

Finally, Phase 2 (3) investigated location differences. It was hypothesised that students living in rural areas would report higher levels of risk factors (i.e., Inhibition,Introversion, Impulsivity, Anxiety, Anger, and Depression) and suicidal behaviour than would students living in regional areas.
Method

8.5 Participants

Participants were 159 students from the Phase 1 sample who were followed up one month later. The retention rate from Phase 1 to Phase 2 was 86.9%. Twenty-four students from the original sample of 185 were unavailable on the day of testing. Two further students were excluded because they had received follow-up intervention after Phase 1 testing due to reporting they had a detailed plan to end their lives. The mean age of participants at Phase 2 was 15.0 years, with an age range between 13.4 years and 16.3 years.

Table 8.1 displays the breakdown of participants at Phase 1 and Phase 2 by Gender and Location. Cell percentages remained much the same across time, with males from rural areas remaining over-represented.

Table 8.1

Sample percentages across time by Gender and Location

<table>
<thead>
<tr>
<th>Location</th>
<th>Phase 1</th>
<th></th>
<th>Phase 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male(^a)</td>
<td>Female(^b)</td>
<td>Male(^c)</td>
<td>Female(^d)</td>
</tr>
<tr>
<td>Regional</td>
<td>22.1</td>
<td>22.1</td>
<td>21.8</td>
<td>21.8</td>
</tr>
<tr>
<td>Rural</td>
<td>32.4</td>
<td>23.2</td>
<td>32.2</td>
<td>24.4</td>
</tr>
</tbody>
</table>

*Note.* \(^aN = 101; \(^bN = 84; \(^cN = 84; \(^dN = 71.

In order to rule out change in measures due to sample composition, the 155 students who participated with acceptable data at both Phase 1 and Phase 2 (excluding the students who were followed up after Phase 1 testing) were compared on 11 risk
factor measures with the 30 students who participated only at Phase 1. A between-
groups Manova was conducted. No significant difference was found at the global level:
\( F(11, 173) = .96, p = .49 \), Wilk's Lambda = .96, partial eta squared = .06. Therefore, the
composition of the sample did not alter significantly from Phase 1 to Phase 2 in relation
to the measures of interest.

8.6 Materials

Participants completed the same measures as at Phase 1. Instruments included the
PBI (Parker et al., 1979), three scales from the Profile of Mood States Inventory (i.e.,
Tension-Anxiety, Depression-Dejection, and Anger-Hostility; McNair et al., 1992), a
suicidal behaviour scale based upon the Revised Adolescent Suicide Questionnaire
(Pearce & Martin, 1994b), and three congeneric scales developed in Phase 1 and derived
from the MAPI (Millon et al., 1982). The congeneric scales were the Inhibition Scale,
the Introversion Scale, and the Impulsivity Scale.

The congeneric Inhibition Scale comprised five items focusing on personal
cohesion and direction about one's future. It yielded an internal consistency reliability of
.77 at Phase 1. The correlation between the congeneric Inhibition Scale and Millon's
original Inhibited Scale was high \( r = .75 \). Millon (1981) contended that high scorers on
his Inhibited scale were particularly vulnerable to depressive disorders, confirmed by the
research of Pantle et al. (1990) and Siemen et al. (1994). The current congeneric
Inhibition Scale displayed similar properties. The correlation between the congeneric
Inhibition Scale and the POMS Depression Scale (McNair et al., 1992) in Phase 1 was \( r
= .62 \). The congeneric scale likewise displayed similar relationships with Care and
Protection as did Millon's Inhibited Scale. Inhibition correlated at .35 with (poor)
Mother Care, at .38 with Mother Protection, at .42 with (poor) Father Care, and at .32 with Father Protection.

The congeneric Introversion Scale comprised five items focusing on sociability and one's sense of social isolation. It yielded an internal consistency reliability of .78 at Phase 1. There was a small but definite similarity between the congeneric Introversion Scale and Millon's original Introressive Scale (Millon et al., 1982), shown by a correlation of .26. The Introversion Scale was designed to match the gregarious and warmth facets of the NEO-PI-R Scale for Extraversion (Costa & McCrae, 1992). The NEO-PI-R Extraversion Scale is related to positive affect, a depression-specific measure. People low on extraversion and, therefore, high on introversion, are highly emotional, often despairing, and clinically depressed (Costa & McCrae, 1992). Likewise, this scale is related to the POMS Depression Scale (McNair et al., 1992) and to the MAPI Inhibited Scale, a measure of depressive vulnerability according to Millon (1981). The correlation between the congeneric Introversion Scale and the POMS Depression Scale was .55 in Phase 1. The correlation between the congeneric Introversion Scale and the MAPI Inhibited Scale was .75 in Phase 1.

The congeneric Impulsivity Scale comprised three items focusing on lack of cooperation and nonconformity. It yielded an internal consistency reliability of .65 at Phase 1. The congeneric Impulsivity Scale related somewhat to the original MAPI Impulse Control Scale, $r = .48$ at Phase 1. The correlation between the congeneric Impulsivity Scale and the POMS Depression Scale was .37, $p < .001$, a small but definite correlation. Even though the content differed somewhat between the scales, both the congeneric Impulsivity Scale and Koslowsky et al.'s (1992) Impulsivity measure influenced Anger in structural equation models. Koslowsky et al. found a bivariate
correlation of .73, \( p < .001 \), between Impulsivity and Anger. Further, the correlation between Millon's Impulse Control Scale and the Edwards Personal Preference Schedule Aggression Scale (Edwards, 1959) was .43, and the correlation between the congeneric Impulsivity Scale with Anger was .44.

Time spent on the Reach Out! internet site over one month was assessed using a rating scale. The coding arrangement was 0 = no time beyond the introductory session, 1 = additional time of up to two hours, 2 = two to three additional hours, 3 = three to five additional hours, and 4 = five or more additional hours.

8.7 Procedure

Ethics approval was obtained from both Deakin University (Appendix A) and the Victorian Education Department (Appendix B). Research was conducted at all times in accordance with the principles contained in the National Statement on Ethical Conduct in Research involving Humans (June, 1999). Directly after the baseline testing for Phase 1, participants were introduced to the Reach Out! internet site (www.reachout.asn.au) by the researcher who gave a verbal presentation with overheads. This presentation was followed by a question and answer exercise to help participants further explore the site (Appendix E). Each school allowed at least 30 minutes for students to complete this exercise. Difficulties with the computers at three schools (i.e., Belmont High School, Colac College, and Newcomb Secondary School) meant that not all students had a full 30 minutes to acquaint themselves with the site. To compensate, all schools granted participating students extra computer time to complete the question-and-answer exercise over the following month.

Students were awarded a McDonald's food voucher for completing the question-
and-answer sheet about the site. To encourage maximum use of the site for one month, further rewards were offered to the students who came up with the best ideas for improving the site.

Participants were then tested after one month to assess for short-term change in the measures obtained at Phase 1. Prior to the administration of the questionnaire (Appendix G), the researcher gave all participants written and verbal explanations about the phase and instructions for completing the questionnaire. Students were assured of the confidentiality of their responses. However, they were also informed that if they reported a strong sense of self-harm, the researcher would speak with them further and organise counselling as appropriate. This strategy followed the recommendations of Shochet and O’Gorman (1995). Following the administration of the questionnaire, the researcher went through all responses to the item “I have a detailed plan for how to end my life,” spoke with each student personally who endorsed this item, and organised follow-up counseling or support, as appropriate.

Results

The results for Phase 2 will proceed by reporting on data preparation and assumptions, general descriptives, and scale test-retest reliabilities. SEM will then be reported for three analyses: tests of consistency for model fit, a test to compare the variable means at Phase 1 vs Phase 2, and a test to assess short-term effectiveness of exposure time on the internet site. Finally, results from two multivariate analyses of variance will be reported: to assess mean differences within a high-risk subgroup, and to determine possible regional versus rural differences in the measures.
8.8 Data Preparation and Assumptions

Several random missing values were replaced by the mean for that item, as recommended by Tabachnick and Fidell (1996). Prior to analysis, all variables were screened separately for normality and linearity, and for univariate and multivariate outliers. Several random univariate outliers were recoded to the cut-off criterion of three z-scores beyond the mean, as recommended by Tabachnick and Fidell (1996).

Of the 159 initial participants, six students reported a detailed plan to end their life, and were followed up. Two of these students admitted they were fooling around, and one student had misunderstood the question. Their answers were changed accordingly. Four students were excluded due to multivariate outliers, leaving a total of 155 participants at Phase 2. All further analyses were performed using this sample.

The 13 measures used in the structural equation models were calculated in the same way as for Phase 1. However, for the congeneric scales (i.e., Inhibition, Introversion, Impulsivity, and Suicidality), the factor score weights calculated in Phase 1 produced regression weights that were greater than one on the latent variables for the Phase 2 data, a mathematical impossibility. Thus, the factor score weights for items in the congeneric scales were averaged across the separate values calculated for Phase 1 and Phase 2 data. This minor adjustment gave more stable values and an identified model with very acceptable regression weights.

Factor score weights, calculated from the variance and factor loading matrices, are not linearly proportional to factor loadings. A factor score weight can, therefore, take a weight of more than 1. The factor score weights for items within each congeneric scale remained much the same from Phase 1 to Phase 2, altering less than .20. All three exceptions were for the Impulsivity Scale. Item 2, “I like to follow instructions and do
what others expect of me," decreased from 1.28 to .78. Items 4 and 5, "I always try to do what is proper" and "I am a quiet and cooperative person," increased respectively from .45 to .70 and from .65 to .89.

Because SEM is highly sensitive to outliers, each measure was explored using histograms and box plots, as recommended by Holmes-Smith (1999). As a result, several high scores in the suicidality items were recoded to one unit beyond the 25th or 75th percentiles for that item.

8.9 General Descriptives

8.9.1 Assessment of perceived parenting styles. Summary statistics for the parenting measures (i.e., Care & Protection) are shown in Table 8.2. The mean PBI scores for this sample were similar to those reported for adolescents of a similar age (Adam et al., 1994; Beutrais et al., 1999; Burbach et al., 1989; Martin & Waite, 1994; Parker et al., 1995).

Table 8.2

Scale range, mean, and standard deviation of parenting measures by gender

<table>
<thead>
<tr>
<th>PBI Measure</th>
<th>Scale Range</th>
<th>Malesa M</th>
<th>SD</th>
<th>Femalesb M</th>
<th>SD</th>
<th>Total M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother Care</td>
<td>0-36</td>
<td>28.46</td>
<td>6.20</td>
<td>29.23</td>
<td>5.65</td>
<td>28.81</td>
<td>6.36</td>
</tr>
<tr>
<td>Father Care</td>
<td>0-36</td>
<td>27.56</td>
<td>6.35</td>
<td>25.54</td>
<td>6.93</td>
<td>26.65</td>
<td>6.67</td>
</tr>
<tr>
<td>Mother Protection</td>
<td>0-39</td>
<td>11.26</td>
<td>7.04</td>
<td>10.07</td>
<td>4.94</td>
<td>10.72</td>
<td>6.19</td>
</tr>
<tr>
<td>Father Protection</td>
<td>0-39</td>
<td>8.84</td>
<td>5.77</td>
<td>9.89</td>
<td>6.48</td>
<td>9.31</td>
<td>6.11</td>
</tr>
</tbody>
</table>

Note. PBI = Parental Bonding Instrument. a_n = 84. b_n = 71.
8.9.2 Assessment of mood and personality measures. Descriptive statistics for the mood and personality measures by gender are shown in Table 8.3. Note that the values are for the unweighted POMS scores and the congeneric scale scores. No adolescent norms are available for the POMS. However, in an Australian study, Smith (1994) reported POMS scores for 200 undergraduate psychology students with a mean age of 26.9 years, of whom 76% were female. Smith reported a mean score of 16.3 ($SD = 10.6$) for Anxiety, and a mean score of 9.8 ($SD = 6.6$) for Depression. The current sample were somewhat less anxious but with a similar depression level. Further, POMS means at Phase 2 were similar to respective means at Phase 1 for Anger (14.01), Anxiety (9.51), and Depression (13.92). Mean values for the congeneric scales were also similar to those obtained at Phase 1: Inhibition (.24), Introversion (.77) and Impulsivity (.85). Females scored somewhat higher than did males for all measures.
Table 8.3

Scale range, mean, and standard deviation of mood and personality measures by gender

<table>
<thead>
<tr>
<th>Measure</th>
<th>Scale Range</th>
<th>Males(^a)</th>
<th>Females(^b)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>POMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anger</td>
<td>0-48</td>
<td>10.68</td>
<td>8.59</td>
<td>13.27</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0-36</td>
<td>8.03</td>
<td>5.02</td>
<td>9.38</td>
</tr>
<tr>
<td>Depression</td>
<td>0-60</td>
<td>6.75</td>
<td>8.32</td>
<td>12.22</td>
</tr>
<tr>
<td>Personality Scales</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhibition</td>
<td>0-.95</td>
<td>.16</td>
<td>.22</td>
<td>.23</td>
</tr>
<tr>
<td>Introversion</td>
<td>0-2.71</td>
<td>.55</td>
<td>.77</td>
<td>.97</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>0-2.38</td>
<td>.76</td>
<td>.80</td>
<td>.83</td>
</tr>
</tbody>
</table>

Note. POMS = Profile of Mood States; A higher score indicates more of the quality.

\(^an = 84, \(^bn = 71.\

8.9.3 Assessment of suicidal behaviour items. Endorsement frequencies of the eight suicide behaviour items by gender are given in Table 8.4. All endorsement frequencies are lower than their corresponding values at Phase 1. For those items similar to questions in the Suicide Ideation Questionnaire (Reynolds, 1987), the current endorsement frequencies were also slightly below those given for their US sample. The Suicide Ideation Questionnaire endorsement frequencies were: life not worth living (26%), no one would miss me (25%), and told another will take my life (11%). Australian students in the current research were slightly younger (mean age = 14.9 years) than US students in the Suicide Ideation Questionnaire sample (mean age = 16.1 years).
Table 8.4

*Endorsement frequencies by gender for suicidal behaviour items*

<table>
<thead>
<tr>
<th>Item</th>
<th>Endorsement Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males(^a)</td>
</tr>
<tr>
<td>I sometimes believe life is not worth living.</td>
<td>10.80</td>
</tr>
<tr>
<td>No one would miss me if I was not here.</td>
<td>14.89</td>
</tr>
<tr>
<td>I often think about ending my life.</td>
<td>8.33</td>
</tr>
<tr>
<td>I have a general plan for how to end my life.</td>
<td>9.51</td>
</tr>
<tr>
<td>I have deliberately injured or harmed myself.</td>
<td>8.46</td>
</tr>
<tr>
<td>I have told at least one other person that I am going to take my life.</td>
<td>3.60</td>
</tr>
<tr>
<td>I have tried to kill myself.</td>
<td>2.48</td>
</tr>
<tr>
<td>I have a detailed plan for how to end my life.</td>
<td>3.56</td>
</tr>
</tbody>
</table>

*Note:* \(^a\)\(n = 84\); \(^b\)\(n = 71\).

Endorsement frequencies found in this phase were comparable to the frequencies found in other research for the items: life not worth living, ideation, having plans, revealing intent to another, self-harm, and attempting (eg., Garrison et al., 1991; Martin et al. 1995; Pronovost et al., 1990; Rubenstein et al., 1989; Tousignant et al., 1993). Endorsement frequencies were lower, however, than frequencies found by Pearce and Martin (1994a) for the items: ideation (49%), revealing intent to another (13%), self-harm (30%), and attempting suicide (9%). Pearce and Martin, however, used a slightly older sample (mean age = 15.8 years).
8.10 Test-Retest Reliability

Test-retest reliabilities across a one-month interval were calculated for all 11 scales used in the study. Values for the PBI scales were: .73 for Mother Care, .60 for Mother Protection, .77 for Father Care, and .75 for Father Protection. Results are similar to the test-retest reliabilities established for the PBI over three weeks for Care (.76) and Protection (.63) by Parker, et al., (1979). Test-retest reliabilities for the POMS scales were: .66 for Anger, .60 for Anxiety, and .69 for Depression. Results were only slightly lower than test-retest reliabilities for the POMS scales (ranging between .65 - .74 over a median period of 20 days; McNair et al., 1992).

Test-retest reliabilities for the personality scales were: .68 for Introversion, .66 for Impulsivity, and .71 for Inhibition. The test-retest reliability for Suicidality was .61, slightly lower than the test-retest reliability found for the SIQ (.72) across the same four week interval (Reynolds, 1987). Overall, reliabilities are adequate for research purposes.

8.11 Analyses Using SEM

Intercorrelations between all measures used in the SEM analyses are given in Table 8.5. As with all SEM, analyses are based on covariance structures (Byrne, 2001).
Table 8.5

Intercorrelations of model measures for the Experimental Group at Phase 2

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Loss&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.015</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Poor Mothering</td>
<td>.072</td>
<td>.210&lt;sup&gt;**&lt;/sup&gt;</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Poor Fathering</td>
<td>.155</td>
<td>.098</td>
<td>.392&lt;sup&gt;***&lt;/sup&gt;</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Inhibition</td>
<td>.146</td>
<td>.021</td>
<td>.533&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.309&lt;sup&gt;***&lt;/sup&gt;</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Anger</td>
<td>.172&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.192</td>
<td>.244&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.250&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.421&lt;sup&gt;***&lt;/sup&gt;</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Anxiety</td>
<td>.168&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-.045</td>
<td>.280&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.235&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.421&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.688&lt;sup&gt;***&lt;/sup&gt;</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Introversion</td>
<td>.242&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.044</td>
<td>.330&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.284&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.603&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.452&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.470&lt;sup&gt;***&lt;/sup&gt;</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Impulsivity</td>
<td>.046</td>
<td>.195&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.042</td>
<td>.158&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.121</td>
<td>.235&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.124</td>
<td>-.023</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Depression</td>
<td>.288&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.038</td>
<td>.267&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.276&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.555&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.752&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.812&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.659&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.163&lt;sup&gt;*&lt;/sup&gt;</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>11. Suicidality</td>
<td>.108</td>
<td>.119</td>
<td>.241&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.385&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.517&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.443&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.404&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.491&lt;sup&gt;***&lt;/sup&gt;</td>
<td>.229&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.514&lt;sup&gt;***&lt;/sup&gt;</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Note: a: 1 = male, 2 = female; b: 0 = no separation or death, 1 = either separation or death, 2 = both separation and death.

*<sup>p</sup> < .05, **<sup>p</sup> < .01, ***<sup>p</sup> < .001.
8.11.1 Tests for consistency of model fit. Using SEM, the core model and the extended model established in Phase 1 were tested on the Phase 2 data. The core model yielded $\chi^2(24, N = 155) = 50.36$, $\chi^2/df = 2.1$, $p = .001$, GFI = .94, IFI = .93, and RMSEA = .08. Three of the four fit criteria are excellent, and the RMSEA is acceptable, indicating very good fit (Byrne, 2001). This model is shown in Figure 8.1. The regression weights of most pathways remain very similar to their weights at Phase 1. The main exception is that the regression weight for the pathway from Gender to Inhibition is somewhat lower and no longer significant. The core model explained 39% of the variance in Suicidality at Phase 2 compared with 44% of the variance at Phase 1.

![Diagram](image)

Figure 8.1. The core model at Phase 2.

Note. Dotted lines indicate non-significant pathways.

* $p < .05$. ** $p < .01$. *** $p < .001$. 
When the extended model was tested, the regression weight from Inhibition to Introversion was greater than 1. The model was, therefore, unidentified. An identification problem arises when a proposed model is unable to generate unique estimates because there are fewer equations than unknowns (Hair, Anderson, Tatham, & Black, 1995). One possible reason is that two latent variables may be highly correlated, as was true for Introversion and Inhibition. To correct the problem, a further constraint was included in the model, as recommended by Hair et al. The variance for the error term for Introversion was set at .01. This minor correction produced an identified model.

The extended model yielded $\chi^2(60, N = 155) = 148.60, p < .001$, $\chi^2/df = 2.44$, GFI = .87, IFI = .89, and RMSEA < .08. Only two of the fit measures met fit criteria, indicating mediocre fit (Byrne, 2001). This model is shown in Figure 8.2. The two major differences from the model established at Phase 1 were that the regression weights for the pathways from Poor Fathering to Inhibition and from Gender to Depression were lower and no longer significant at Phase 2. All other regression weights, however, remained similar to their respective values at Phase 1. The extended model predicted 37% of the variance for Suicidality at Phase 2 compared with 43% of the variance at Phase 1. The modification indices indicated that adding a pathway from Gender to Poor Fathering would improve model fit.
Figure 8.2. The extended model at Phase 2.

Note. Dotted lines indicate non-significant pathways. * $p < .05$. ** $p < .01$. *** $p < .001$.

8.11.2 A comparison of latent variable means. In this SEM analysis, the means for Phase 1 were compared with the means for Phase 2. In the usual tests of multi-group comparisons, group means are assessed directly from raw data. However, the latent variables used in SEM are unobserved. Their value is determined from the observed data of related measures. Thus, in testing for the invariance of mean structures between different groups, the intent is to test for the equivalence of means related to each underlying construct (Byrne, 2001).

To test for significant differences in the latent variable means across phases, all respective means for each measure and regression weights were set equal for the two data sets. All latent variable means for Phase 1 data were set at zero and all latent variable means for Phase 2 data remained unspecified to obtain the desired comparison.
Means that do not differ significantly from Phase 1 to Phase 2 are indicated by non-significant values of the critical ratio (CR) for that latent variable, being less than 1.96. It is important to note that despite a significant difference between certain means, the overall model fit may still be very acceptable.

The core model yielded $\chi^2(54, N = 155, 185) = 86.68, p = .003, \chi^2/df = 1.61, CFI = .99, IFI = .99, and RMSEA < .05$. The four fit measures met criteria, indicating excellent fit (Byrne, 2001). Furthermore, no significant differences in latent variable means from Phase 1 to Phase 2 were found in the core model. The extended model yielded $\chi^2(124, N = 155, 185) = 264.96, p = .000, \chi^2/df = 2.14, CFI = .98, IFI = .98, and RMSEA < .06$. Three fit measures met criteria, and the RMSEA was acceptable, indicating very good fit (Byrne, 2001). One significant difference in latent variable means was found. The latent variable mean for Introversion was significantly lower at Phase 2 than at Phase 1 (CR = 2.02).

8.11.3 Tests for effect of exposure time spent on the internet site. Most participants did not explore the Reach Out! internet site beyond the introductory session. Only 1.3% of students spent more than five extra hours on the site, 3.9% spent between two and three hours on the site, 26.5% spent up to two hours on the site, and 68.4% spent no extra time on the site.

As determined by the latent variable means test, Introversion alone varied significantly across time in the extended model. Otherwise, no general intervention effect was found. However, it was possible that the effect may have operated as a function of time spent on the site. Therefore, to assess for an effect of time spent on the Reach Out! internet site, two further structural equation models were developed and
tested, consistent with recommendations by Hoyle and Smith (1995) and by Arbuckle and Wothke (1999). For simplicity, it was decided to test initially for a site exposure effect using the core model only, and to test the effect only for Depression and Suicidality, as these are the final factors in the model. If there was a significant effect with the core model for either Depression or Suicidality, then the extended model would also be tested. If no effect was found for the core model, none would be found for the extended model.

To test for a significant effect from site exposure time on Depression at Phase 2, the core model at Phase 1 was connected to the core model at Phase 2 via a pathway between Depression at Phase 1 and Depression at Phase 2. The resulting regression weight determined whether Depression at Phase 1 had a significant effect on Depression at Phase 2, without inclusion of site exposure time in the model. The regression weight on the pathway from Depression at Phase 1 to Depression at Phase 2 was .65 ($p < .001$). Depression at Phase 1 significantly influenced the level of Depression at Phase 2.

Site exposure time was then incorporated into the model as an intervening factor between Depression at Phase 1 and Depression at Phase 2, to determine whether the extent of exposure had a significant effect on Depression at Phase 2. A simplified model which includes site exposure time is shown in Figure 8.3. Loss and Gender were not included in the model as they remained invariant over time. When site exposure time was included in the core model, the regression weight from site exposure time to Depression at Phase 2 was non-significant. Therefore, the extent of exposure to the Reach Out! internet site had no significant effect on levels of Depression at Phase 2.
Figure 8.3. Structural equation model used to test for effect of site exposure time on Depression.

*Note.* Dotted lines indicate non-significant pathways. ***$p < .001$.***

The same strategy was repeated to test for a site exposure effect on Suicidality. A simplified model which includes site exposure time is shown in Figure 8.4. Again, Loss and Gender were not included in the model. The regression weight on the pathway from Suicidality at Phase 1 to Suicidality at Phase 2, without site exposure time included in the model, was .87 ($p < .001$). Thus, Suicidality at Phase 1 did significantly influence the level of Suicidality at Phase 2. However, when site exposure time was included in the core model, the regression weight from site exposure time to Suicidality was non-significant. Therefore, the extent of exposure to the *Reach Out!* internet site had no significant effect on level of Suicidality at Phase 2.
Figure 8.4. Structural equation model used to test for effect of exposure time spent on the Reach Out! internet site on Suicidality.

Note. Dotted lines indicate non-significant pathways. **p < .01.

8.12 Analyses Using Manova

8.12.1 Mean differences within the high-risk subgroup. Initially it was not planned to compare high-risk adolescents with non-risk adolescents. However, it was noted that some students who spent extra time on the Reach Out! internet site recorded high depression scores. It seemed reasonable that students in greatest need of the information stood to benefit most from exposure to the site, and would be most likely to show change. Therefore, it was decided to compare those students with scores at least one standard deviation above the mean for Depression (.99, N = 25) with non-risk students to determine whether the most vulnerable students did spend more time on the site than did other students, and whether exposure to the site significantly improved levels of risk factors for this subgroup.

The average mean time spent on the Reach Out! site by the non-risk students was
.39, indicating about 45 minutes. The high-risk students recorded a mean time on site of .63, indicating about 80 minutes. Thus, students with the highest Depression scores spent more time on the Reach Out! Site.

Because of the very small sample size for the high-risk subgroup, a latent variable means test using SEM could not to be performed. Instead, a repeated-measures Manova was performed on seven measures (i.e., Inhibition, Introversion, Anxiety, Anger, Impulsivity, Depression, and Suicidality) for the high-risk subgroup. Significant global tests were followed by univariate F tests to establish which measures were significantly different across time, using a .05 probability level. The univariate F tests employed a Bonferroni critical value for significance of $F(1, 23) = 8.9$, derived from an alpha level of .007 for seven measures, as recommended by Tabachnick and Fidell (1996).

At the global level, there was a significant difference between the measures from Phase 1 to Phase 2: $F(7, 17) = 5.25, p < .01$, Wilk's Lambda = .33, partial eta squared = .67. When the results for the dependent variables were considered separately using the Bonferroni adjustment, at-risk students at Phase 2 had significantly lower scores for Inhibition ($M = .39, SD = .27$) than at Phase 1 ($M = .63, SD = .27$): $F(1, 23) = 23.69, p < .001$, and partial eta squared = .50. At-risk students at Phase 2 also had significantly lower scores for Suicidality ($M = .11, SD = .11$) than at Phase 1 ($M = .18, SD = .10$): $F(1, 24) = 10.29, p = .004$, and partial eta squared = .30. Both values for partial eta squared indicated strong power (Cohen, 1988). Further, all other risk measures improved from Phase 1 to Phase 2, even though differences did not reach significance.

8.12.2 Location differences. SEM was not used to test for the effect of location on risk factors due to the relatively small sample size. Instead, a between-groups Manova
was used to evaluate the effect of location on all 11 measures (i.e., Mother Care, Father Care, Mother Protection, Father Protection, Inhibition, Introversion, Anxiety, Anger, Impulsivity, Depression, and Suicidality). No significant effect was found for location at the global level: \( F(11, 143) = 1.37, p = .195; \) Wilk's Lambda = .91; partial eta squared = .10. Partial eta squared indicated a moderate level of power for this test (Cohen, 1988).

**Discussion**

The aims of this phase were to (1) test the best-fitting models developed at Phase 1 for consistency of model fit over a one-month period, and (2) to evaluate the short-term effects of a web-based preventative strategy upon the previously established model of risk factors for adolescent suicide. The internet site was designed as a psychoeducational prevention strategy to reduce levels of risk factors for adolescent depression and suicidal behaviour.

Results showed that the core model of risk factors remained very consistent across a one-month period. The extended model of risk factors also remained relatively consistent at one-month follow-up. There was a significant decrease in Introversion over the one-month period following the preventative strategy. Further, when the scores of the most vulnerable subgroup were explored, there were significant decreases in their levels of Inhibition and Suicidality. The Discussion will proceed by addressing in turn: short-term consistency of the structural models, the effectiveness of the *Reach Out!* Internet site, location differences, limitations of the research, and conclusions.
8.13 Short-term consistency of the structural models

Tests for consistency of regression weights across a one-month period demonstrated that the models established at Phase 1 maintained consistency when tested one month later. This consistency suggests that the models were not over-fitted during development, lending more weight to the models. At both times of testing, parenting factors remained as important antecedents to personality factors, which in turn influenced mood factors and suicidal behaviour.

The short-term retesting of the models continued to support an indirect model of risk factors for adolescent depression and suicidality. In both the core model and the extended model, Depression remained the strongest direct predictor of Suicidality. Poor Fathering also remained a direct significant predictor of Suicidality, and likewise continued to contribute indirectly to Suicidality via Impulsivity, Anger, and Depression. The models essentially remained the same, with two exceptions. First, the pathways from Gender were shown to lack stability. The pathway from Gender to Inhibition ceased to be significant in the core model, and the pathway from Gender to Depression ceased to be significant in the extended model. Second, the pathway from Poor Fathering to Inhibition ceased to be significant in the extended model.

It is difficult to explain the inconsistency in the relationship between Gender and Inhibition across time in the core model. In the Phase 1 discussion, it was suggested that the link between Gender and Inhibition indicated that adolescent females experience less sense of future direction and personal cohesion than do males. The current results may appear to question the validity of this statement. However, the regression weight for the pathway fell just below significance at Phase 2, and the pathway remained significant in
the extended model. It is probable that with a larger sample and increased power, this pathway in the core model would be significant. The pathway between Gender and Inhibition is relatively weak, but most likely definite.

In Phase 1, it was noted that research exploring a significant relationship between gender and depression was inconsistent. Although some research indicates that girls report significantly higher depression levels than do boys (i.e., Garrison et al., 1991; Pronovost et al., 1990), other research has found no significant correlation between gender and depression (i.e., Martin et al., 1995; Rubenstein et al., 1989). It was concluded that differing content in the depression measures across studies could explain this inconsistency. However, the current result renders this possibility less plausible. The same instruments were used with the data at both Phases 1 and 2, but at Phase 2, the pathway between Gender and Depression in the extended model no longer reached significance.

At Phase 1, the pathway from Gender to Depression was significant at the $p < .001$ level. This pathway remained significant at a lesser level in the core model at Phase 2, but became non-significant in the extended model. In the extended model, Depression was predicted by Anger as well as Gender. Anger may well take some of the predictiveness from Gender given the small but definite relationship between these variables ($r = .17$). The regression weight between Gender and Depression was slightly lower in the extended model (.15) than in the core model (.19) at Phase 1 as well as at Phase 2. Although the zero-order correlation between Gender and Depression decreased from Phase 1 (.39) to Phase 2 (.29), it remained significant at $p < .001$. It would appear
that Gender does influence Depression. However, from the evidence of the extended model, the relationship seems to be indirect via Inhibition.

The second difference in the extended model was that Poor Fathering ceased to have a significant influence on Inhibition and thus exerted less effect on an adolescent’s sense of direction and personal cohesion. One possible reason is that the influence of Poor Fathering on Inhibition includes indirect effects from Poor Mothering. At Phase 2, Poor Mothering had a stronger direct effect on Inhibition and had a weaker effect on Poor Fathering. Thus, the indirect effect of Poor Mothering on Inhibition via Poor Fathering may have attenuated. Another possibility, discussed later, is the intervention effect on Inhibition that reduced the scores for a high-risk subgroup. It is noted that the zero-order correlation between Poor Fathering and Inhibition reduced from .42 in Phase 1 to .31 in Phase 2.

In Phase 2, then, the only indirect effect of Poor Fathering on Suicidality was via Impulsivity, Anger, and Depression, and the regression weights on this pathway maintained strong consistency. The Phase 2 models suggest that Poor Mothering influences how adolescents feel about their sense of personal cohesion and the future (i.e., Inhibition), whereas Poor Fathering influences an adolescent’s willingness to cooperate (i.e., Impulsivity). Mothering, then, seems to affect how adolescents feel about themselves, a personal outcome, whereas fathering appears to affect behaviour, a more social outcome. Nevertheless, the direct effect of Poor Fathering on Suicidality also indicates a second form of influence from fathering.
8.14 Effectiveness of the Reach Out! site

When the latent variable means of the seven factors (i.e., Inhibition, Introversion, Impulsivity, Anxiety, Anger, Depression, and Suicidality) were compared from pre- to post-intervention, Introversion decreased significantly for the entire sample. Inhibition and Suicidality decreased significantly for the high-risk subgroup.

Adolescents in the whole sample reported feeling a reduced sense of alienation (i.e., Introversion). It could be that even a relatively brief connection to an internet site lessened the feelings of isolation amongst participants. The stories of others on the Reach Out! site may have helped students to recognize that they are not alone in how they feel about themselves and the world. Information sheets may have given ideas of how they could better befriend and communicate with others. Alternatively, it may be that having another person (even a researcher) take an interest helped those who felt alone in the world to feel more cared about.

It was hypothesised that other aspects of the site would lessen other risk factors as well, and that there would be flow-on effects from decreased risk factors to subsequent factors. However, the decrease to Introversion did not lead to decreases in the subsequent factors of Anxiety, Anger, Depression, and Suicidality. Nevertheless, six of the seven measures hypothesised to decrease did decrease, although not significantly. Anxiety alone did not decrease. The lack of a significant effect upon other risk factors from exposure to the internet site may be attributed to the lack of time spent on the site. Following the initial introduction, only 5% of students spent a further two or more hours on the site, and just over 30% spent any extra time at all on the site. An alternative explanation is that the majority of the participants had minimal problems originally, and
thus the site, though interesting, would be largely irrelevant to them.

For the high-risk subgroup alone, Inhibition and Suicidality levels significantly decreased, and all other measure means decreased, though not significantly. This suggests that, for the most at-risk students, the site may be an effective intervention. As mentioned previously, the decrease in Inhibition levels for the high-risk subgroup may also have affected the pathway in the model from Poor Fathering to Inhibition, attenuating the regression weight at Phase 2.

Why the site influenced Inhibition and Suicidality more than the other factors is intriguing. The Reach Out! site offers much information to explain feelings and to normalise negative feelings. It also contains stories which offer practical strategies and hope for change. Both aspects would contribute to a better sense of personal cohesion and increased optimism about the future (i.e., Inhibition). The site also offers practical strategies for what to do when one is feeling down. These strategies would impact on Suicidality. Further, other factors not included in the model may have altered and impacted on either Inhibition or Suicidality.

The decreases in Introversion for the entire sample, and in Inhibition and Suicidality for the high-risk subgroup, are consistent with the intentions of the website itself. Reach Out! aims to improve adolescents' psychological well-being. However, one would expect these same aspects of the Reach Out! site to also impact positively on the other measures. Christensen et al., (2004) found that time spent on both the BluePages and MoodGym internet sites decreased levels of depression in adolescents. MoodGym is a cognitive-behavioural intervention program for depression that offers strategies including relaxation techniques, exercise, and self-affirmation statements, not
offered by Reach Out! at the time of this study. BluePages, however, offers very similar information to the Reach Out! site.

Three aspects may explain the failure to obtain change in all seven risk factors. First, although the power in the current study was strong (Keppel, 1991), with a partial eta squared of .50 for Inhibition and .30 for Suicidality, the sample size in the current study was relatively small. Christensen et al., (2004) had a sample of over 500 participants. It may be that with a larger sample, some non-significant differences would have reached significance. For example, a decrease in Depression did not quite reach significance, yet partial eta squared = .23 indicated a strong effect from the intervention (Cohen, 1988).

Second, those risk factors which altered significantly for the high-risk group implicated a particular pathway, subsequent to the parenting factors, that runs from Inhibition via Depression to Suicidality. The site, therefore, seemed to best address a process whereby a lack of personal cohesion and feelings of hopelessness are antecedents to suicidal ideation and self-harm. The site appeared less effective for the second pathway to Suicidality via Anger and Depression.

Third, many students did not return to spend time on the site. This researcher offered rewards, and at one school, even went back to offer an extra session with personal assistance. No one turned up for that session. It may be that the demands of school scheduling and homework meant that the students simply chose not to prioritise this activity. Compared with their academic demands and social activities, surfing the Reach Out! site may have appeared trivial.

Alternatively, it may be that the site itself is not as appealing as it could be. Ad
hoc comments by students included many complaints that what one could actually do on the art page was very limited. Also, the students were looking for a chat line where they could talk with other students. Such a chat line was not available at that time. A third possible reason students did not return to the site may be that access at school was a stigma. They may have experienced teasing or criticism from other students for being "weak" or "mental" if they were seen to return to the site.

By contrast, students in the high-risk sub-group were more likely to have revisited the site following the introduction than did other students. Those students recording the highest levels of Depression were, at least, encouraged to make use of the site, and did choose to spend more time on the site than did other students.

8.15 Location Differences

In Phase 1, it was noted that adolescents living in regional Victoria reported significantly higher anger and anxiety scores than did adolescents living in rural areas, even though the highest levels of suicidality are reported in rural areas. It was suggested that Geelong in regional Victoria may be a unique entity, neither urban nor rural. Having levels of population, area, and facilities between that of urban and rural Victoria, for adolescents it may offer the worst of both worlds. Alternatively, the significantly higher levels of anxiety and anger reported in this study may be idiosyncratic to the Geelong region, following Geelong’s major financial crisis in the late 1980’s.

Results from Phase 2 render this reasoning less plausible, with no significant location differences found only one month later. The possibility that exposure to the Reach Out! site lowered anger and anxiety levels is ruled out because students living in
rural areas spent slightly more time on the site (.49) than did students living in regional Victoria (.27). One would have, therefore, expected a greater difference. The effect strength for location was low in the Phase 1 analyses, partial eta squared = .07 for Anger and .04 for Anxiety (Cohen, 1988). It would thus seem that the location differences in Anger and Anxiety levels at Phase 1 may have been individual to that sample.

8.16 Limitations of the Current Research

Strengths and limitations of the current study will be discussed following Phase 3. However, it is important to highlight two limitations with the current part of the study. First, the models have been tested on only one sample. It is important to test the models with other samples in order to assess consistency of model fit and generalisability. Second, so far only short-term assessment has been conducted to test consistency of model fit across time. It is also important to assess consistency of model fit over a longer period of time and also to determine if the short-term benefits from intervention will be maintained. Both of these issues will be addressed in Phase 3 of this study.

8.17 Conclusions

An indirect model of risk factors for suicidality was supported. Results confirmed that both the core model and the extended model of risk factors remained consistent at one-month follow-up. The confirmation of the models following short-term follow-up offers further support for both Attachment Theory (Bowlby, 1969) and Millon’s theory of personality (1981). It seems that the quality of parenting strongly influences an adolescent’s sense of well-being. Further, family factors directly influence personality
factors, which in turn influence mood factors, including depression, which then influence suicidality.

The *Reach Out!* internet site demonstrated some effectiveness as a prevention strategy for adolescent suicidality, especially for the high-risk students, by overriding some influence from parenting factors. Overall, participants reported significantly lower levels of feeling socially isolated (i.e., Introversion) after spending time on the site. High-risk students, who also spent more time on the site than did their non-risk peers, reported significantly lower levels of Inhibition and Suicidality than did their non-risk peers. It seems that the *Reach Out!* internet site may have a significant and positive effect in increasing a sense of personal cohesion and in decreasing suicidal behaviour in those students who report feeling most depressed. The long-term effects of the *Reach Out!* internet site as a prevention strategy, and the consistency of model fit over twelve months, will be further explored in Phase 3.
Chapter 9: Phase 3

Introduction

9.1 Overview

Based on theory and using structural equation modeling (SEM), Phase 1 developed two best-fitting models of risk factors for suicidal behaviour in Year-9 adolescents. Phase 2 tested the models established in Phase 1, and examined short-term change due to the effectiveness of the Reach Out! internet site (www.reachout.asn.au) to reduce levels of risk factors involved in adolescent depression and suicidality. Results supported the indirect model of risk factors established in Phase 1. Further, short-term exposure time to the internet site significantly reduced levels of Introversion for the general sample, and significantly reduced levels of Inhibition and Suicidality for the high-risk subgroup.

At the theoretical level, results from Phase 1 and Phase 2 supported both Attachment Theory (Bowlby, 1969) and Millon’s theory of personality (1981). The extended model established two main pathways to Depression and Suicidality in adolescents. In one pathway, parenting factors and Gender influenced Depression and Suicidality via Inhibition. In the second pathway, styles of parenting influenced adolescent’s personalities, which in turn influenced mood factors.

Nevertheless, alternative SEM models may have functioned equally well (Anderson and Gerbing, 1988), and the longer term consistency of the model remained unknown. Therefore, it was important to further assess the models at one-year follow up for the same sample, and to cross-validate the models for a new sample.
Further, having explored the effectiveness of the prevention strategy in the short-term, it was also appropriate to test effects of the prevention strategy over a longer term. Previous research suggests that parenting factors (i.e., Care and Protection) remain stable across time, and are also resistant to depressive bias (Gotlib et al., 1988; Neale et al., 1994). Personality factors also remain relatively stable over time (Block, 1981; Eron, 1987; Magnussen & Bergman, 1990). By contrast, mood factors have been shown to fluctuate considerably over time, especially in adolescence (Larson & Ham, 1993; Nottelmann, Inoff-Germain, Susman, & Chrousos, 1990). Likewise, previous research has shown that suicidal behaviours may not remain stable over time (Husain & Vandiver, 1984; Kosky, Silburn, et al., 1990). Thus the risk factors employed in the current models of suicidality appear to comprise a mix of stable and unstable factors. As a consequence, the paths between risk factors may either strengthen or attenuate over time.

9.2 Long-term Research in Suicidal Behaviour

Husain and Vandiver (1984) analysed 167 case studies of child and adolescent suicidal behaviour reported post-1953. Suicidal behaviour increased with age. In one of the few longitudinal studies performed with 1000 US adolescents with a mean age of 12.8 years, Garrison et al. (1991) found that general levels of suicidal ideation remained stable over time. However, individual suicide scores varied considerably over time. Although 90% of low scorers remained low scorers, only 15% to 18% of high scorers remained high scorers over a 1-year period. Further, the depression score significantly predicted the suicide score each year, and Year 1 and Year 2 depression scores were significant predictors of high suicidal ideation in Year 3.
In a long-term study of prevention strategies for suicidality, Puskar et al. (2003) investigated short- and long-term effectiveness of a group-administered intervention to teach coping skills to young people. Study details are outlined in the preceding chapter. The Experimental Group received 10 group sessions to teach them coping skills. Follow-up testing occurred after 6 months and after 12 months. A Control Group was also given follow-up testing after 6 months and 12 months. Using repeated-measures analyses, depression scores for the Experimental Group declined significantly at 6-month follow-up compared with pre-intervention scores. However, there was no significant difference in depression scores at 12-month follow-up compared with pre-intervention scores or with the Control Group. Intervention effects on depression, then, did not appear to maintain over the longer term.

In another long-term study, Clarke et al. (1995) used a cognitive-behavioural prevention program. The 15-week after-school program offered Year-9 students education about feelings and interpersonal behaviour. Results found significantly fewer cases of diagnosed major depression in the prevention group than in the Control Group. This study had a self-selected sample, and after-school time may not be a preferred time for adolescents. However, results of prevention strategies appear promising.

The intervention strategy evaluated in the current research focused on education and a diverse set of means for increasing hope and countering negative mood states. It is informative to determine whether this type of intervention, delivered on-line, can reduce levels of risk factors over a longer period, compared with a Control Group. Also, based on the Phase 2 results, it is useful to determine whether maintenance effects for the
intervention are evident for the general sample, or only for the high-risk adolescents. A 12-month time frame was chosen for this exploration.

9.3 Aims

Phase 3 followed up the original sample to (Aim 1) replicate the model established at Phase 1 and confirmed at Phase 2, and thereby investigated the consistency of model fit over a 12-month period. Phase 3 also used a new sample to (Aim 2) evaluate invariance across samples of the model established at Phase 1. It was hypothesised that the best-fitting models (i.e., core model and extended model) developed in Phase 1 would fit equally well with the data of the new sample collected in Phase 3 for both the Experimental Group and the new sample.

Further, Phase 3 (Aim 3) investigated effects on risk factors due either to age or to the maintenance of an intervention. Age effects and intervention effects were simultaneously evaluated by two sets of mean comparisons: within group pretest-posttest measures for the Experimental Group, and between-group posttest measures for the Experimental Group versus baseline measures for a Control Group of similar age. Further explanation is given in section 9.7.

Maintenance of intervention effects was evaluated by comparing one-year follow up measures for the Experimental Group with baseline measures for a Control Group of similar age. It was hypothesised that the Experimental Group would have lower levels of risk factors than would the Control Group. Specifically, it was hypothesised that the Experimental Group’s reported levels of Inhibition, Introversion, Impulsivity, Anxiety, Anger, Depression, and Suicidality would be lower. Based on findings from Phase 2, it
was further expected that reduced risk factors for the Experimental Group would be more evident for the high-risk subgroup than for the entire group.

Finally, Phase 3 (Aim 4) investigated location differences. It was hypothesised that rural students would report higher levels of risk factors than would regional students.

**Method**

9.4 **Participants**

Participants in the Experimental Group were 135 students from the Phase 1 sample who were followed up 12 months later. The retention rate from Phase 1 to Phase 3 was 72.8%. Forty-seven students from the original sample of 185 were unavailable on the day of testing. Three further students were excluded because they had received follow-up intervention after reporting they had a detailed plan to end their lives at Phase 2. The average age of the students in the Experimental Group at Phase 3 was 15.9 years, with an age range between 14.3 years and 17.2 years.

Participants in the Control Group consisted of 103 Year-10 students who completed baseline measures when initial data for the Experimental Group was collected. These students were volunteers from the seven participating schools. The average age of the students in the Control Group was 15.8 years, with an age range between 14.0 years and 17.3 years.

Table 9.1 displays the breakdown of participants across groups by gender and location. Cell percentages remained much the same across time for the Experimental Group, with males from rural areas remaining over-represented. By contrast, regional females and rural males were somewhat over-represented in the Control Group.
In order to rule out change in measures due to sample composition, the 135 students in the Experimental Group who participated at both Phase 1 and Phase 3 were compared with the 50 students who participated only at Phase 1. A between-groups Manova was conducted to compare the 11 risk factor measures collected at Phase 1. No significant difference was found at the global level: $F(11, 173) = 1.51, p = .13$, Wilk’s Lambda = .91, partial eta squared = .09. Therefore, the composition of the sample did not alter significantly from Phase 1 to Phase 3 in relation to the measures of interest.

Table 9.1

*Sample percentages across time and group by gender and location*

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th></th>
<th>Phase 3</th>
<th></th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M$^a$</td>
<td>F$^b$</td>
<td>M$^c$</td>
<td>F$^d$</td>
<td>M$^e$</td>
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<td>22.1</td>
<td>23.0</td>
<td>20.7</td>
<td>17.2</td>
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<td>23.2</td>
<td>35.5</td>
<td>20.7</td>
<td>28.0</td>
</tr>
</tbody>
</table>

*Note.* M = males; F = females. $^aN = 101; ^bN = 84; ^cN = 79; ^dN = 56; ^eN = 45; ^fN = 48.$

9.5 *Materials*

Participants completed the same measures as at Phase 2. Instruments included the PBI (Parker et al., 1979), three scales from the Profile of Mood States Inventory (i.e., Tension-Anxiety, Depression-Dejection, and Anger-Hostility; McNair et al., 1992), a suicidal behaviour scale partly derived from the Revised Adolescent Suicide Questionnaire (Pearce & Martin, 1994b), and three scales developed in Phase 1 that
derived from the MAPI (Millon et al., 1982). The three scales derived from the MAPI were the Inhibition Scale, the Introversion Scale, and the Impulsivity Scale.

Details of the congeneric scales for Phase 1 were given in Chapter 7. At Phase 2, the congeneric Inhibition Scale yielded an internal consistency reliability of .72. The bivariate correlation between the congeneric Inhibition Scale and the POMS Depression Scale (McNair et al., 1992) was .56, $p < .001$. The congeneric scale likewise displayed similar relationships with Care and Protection, as did Millon’s Inhibited Scale. In Phase 2, the respective correlations with the congeneric Inhibition scale were: (poor) Mother Care (.28, $p < .001$), Mother Protection (.34, $p < .001$), (poor) Father Care (.26, $p < .001$), and Father Protection (.31, $p < .001$).

The congeneric Introversion Scale yielded an internal consistency reliability of .76. The correlation between the congeneric Introversion Scale and the POMS Depression Scale was .66, $p < .001$, in Phase 2. The correlation between the congeneric Introversion Scale and the MAPI Inhibited Scale, a scale vulnerable to depressive disorders (Millon, 1981), was .61, $p < .001$, in Phase 2.

The congeneric Impulsivity Scale yielded an internal consistency reliability of .62 at Phase 2. The congeneric Impulsivity Scale related somewhat to the original MAPI Impulse Control Scale, the correlation being .44, $p < .001$. The current research also found a small but significant correlation of .24, $p < .01$, between the congeneric Impulsivity Scale and Koslowsky et al.’s (1992) Impulsivity measure.

A more general question on ideation, “I have thought about killing myself,” was included in this phase to test for a general level of ideation amongst participants, and to compare with other research findings. Time spent on the Reach Out! internet site over
12 months for the Experimental Group was assessed using a rating scale. The coding arrangement was 0 = no time beyond the introductory session, 1 = additional time of up to two hours, 2 = two to three additional hours, 3 = three to five additional hours, and 4 = five or more additional hours.

9.6 Procedure

Ethics approval was obtained from both Deakin University (Appendix A) and the Victorian Education Department (Appendix B). Research was conducted at all times in accordance with the principles contained in the National Statement on Ethical Conduct in Research involving Humans (June, 1999). To address the ethical imperative that all participants should be offered the prevention strategy (Shochet & O’Gorman, 1995), Year-10 students were included as a Control Group. These students were of the same age as the Experimental Group at one-year follow up. All participants (i.e., Experimental Group and Control Group) received baseline testing during Phase 1, followed by an introduction to the Reach Out! internet site (www.reachout.asn.au) by the researcher. Participants in the Experimental Group were followed up after twelve months to assess for long-term change in measures (Phase 3).

Prior to the administration of the questionnaire, the researcher gave all participants written and verbal explanations about the study and instructions for completing the questionnaire. Students were assured of the confidentiality of their responses. However, they were also informed that if they reported a strong sense of self-harm, the researcher would speak with them further and organise counselling as appropriate. This strategy followed the recommendations of Shochet and O’Gorman (1995). Following the
administration of the questionnaire, the researcher went through all responses to the item “I have a detailed plan for how to end my life,” spoke with each student personally who endorsed this item, and organised follow-up counselling or support, as appropriate.

9.7 Experimental Design

The design for evaluating age and intervention effects is shown in Figure 9.1.

```
Year 9                  Year 10

Experimental Group

  Pretest  Intervention + Age Effects  Posttest

  Intervention Effects

  Pretest

Control Group
```

*Figure 9.1.* Design for evaluating age and intervention effects.

As shown, two comparisons of means were conducted. The first comparison was a within group pretest-posttest for the Experimental Group. The second comparison was between-group posttest Experimental Group versus Control Group of similar age. Comparison of these two sets of differences permitted intervention effects to be disentangled from age effects and possible cohort differences. The summary reasoning is shown in Table 9.2.
Table 9.2

*Design to determine age or intervention effect at Phase 3.*

<table>
<thead>
<tr>
<th>Between-Group Comparison</th>
<th>E1 X E3</th>
<th>E1 X E3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference exists</td>
<td>No Difference</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E3 X C</th>
<th>Intervention Effect</th>
<th>Unknown Cohort Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference exists</td>
<td>Age</td>
<td>Neither Age Nor</td>
</tr>
<tr>
<td>No Difference</td>
<td>Effect</td>
<td>Intervention Effect</td>
</tr>
</tbody>
</table>

Note: E1 = Experimental Group at Phase 1; E3 = Experimental Group at Phase 3; C = Control Group.

As set out in Table 9.2, an intervention effect is shown by a significant difference between the Experimental Group at Phase 1 and Phase 3, and also a significant difference between the Experimental Group at Phase 3 and the Control Group. An age effect is shown by a significant difference between the Experimental Group at Phase 1 and Phase 3, and no significant difference between the Experimental Group at Phase 3 and the Control Group. The other two cells of Table 9.2 display the conditions that demonstrate an unknown cohort effect or no effect.

**Results**

The results for Phase 3 will proceed by reporting on data preparation and assumptions, general descriptives, and scale test-retest reliabilities. SEM will then be reported for three analyses. First will be tests of consistency for model fit for the Experimental Group data at Phase 3 and for the Control Group data. Second will be tests to compare the variable means of the Experimental Group data at Phase 3 versus Phase 1
and the Experimental Group data at Phase 3 versus Control Group data. Third will be a test to assess long-term effectiveness of exposure time on the site. Results from multivariate analyses of variance will then be reported to first compare the variable means for the high-risk subgroup at Phase 1 versus Phase 3, and then to assess location differences for both the Experimental Group and the Control Group.

9.8 Data Preparation and Assumptions

Several random missing values were replaced by the mean for that item, as recommended by Tabachnick and Fidell (1996). Prior to analysis, all variables were screened separately for normality and linearity, and for univariate and multivariate outliers. Several random univariate outliers were recoded to the cutoff criterion of three z-scores beyond the mean, as recommended by Tabachnick and Fidell.

Of the 135 participants in the Experimental Group, one student affirmed a detailed plan to end his life, and was followed up. One other student answered positively to “I have tried to kill myself” who did not answer positively to any of the other suicide questions. Because the response pattern was otherwise sensible, this answer was assumed to be a mistake and altered for the purposes of analysis. No students were excluded due to multivariate outliers.

Of the 103 Year-10 students participating in the Control Group, two students were excluded due to incomplete questionnaires. Eight further students were excluded due to multivariate outliers. All subsequent analyses for the Control Group used 93 students. Seven students reported a detailed plan to end their life, and were followed up by the
researcher. Two of these students had misunderstood the question, and their answers were changed accordingly.

The 13 measures used in the structural equation models for the Experimental Group were calculated in the same way as previously, with some minor variations between groups in factor score weights for the congeneric scales. Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings. A factor score weight can, therefore, take a weight greater than 1. Because SEM is highly sensitive to outliers, each measure was explored using histograms and box plots, as recommended by Holmes-Smith (1999). As a result, several high scores in the suicidality items were recoded to one unit beyond the 25th or 75th percentiles for the item.

9.9 General Descriptives

9.9.1 Assessment of perceived parenting styles. Summary statistics for the parenting measures (i.e., Care and Protection Scales) are shown in Table 9.3. The mean PBI scores for the samples were similar to those for adolescents of a similar age (Adam et al., 1994; Beautrais et al., 1999; Burbach et al., 1989; Martin & Waite, 1994; Parker et al., 1995).
Table 9.3

*Scale range, mean, and standard deviation of parenting measures by group and gender.*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Experimental Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scale Range</td>
<td>M (SD)</td>
</tr>
<tr>
<td>PBI</td>
<td>Males(^a)</td>
<td>28.49 (6.05)</td>
</tr>
<tr>
<td>Mother Care</td>
<td>Females(^b)</td>
<td>10.57 (7.00)</td>
</tr>
<tr>
<td>Mother Protection</td>
<td>Total</td>
<td>26.72 (6.30)</td>
</tr>
<tr>
<td>Father Care</td>
<td>Males(^c)</td>
<td>8.43 (5.86)</td>
</tr>
<tr>
<td>Father Protection</td>
<td>Females(^d)</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* PBI = Parental Bonding Instrument.

\(^a n = 79; \(^b n = 56; \(^c n = 45; \(^d n = 48

9.9.2 Mood and personality measures. Descriptive statistics for the mood and personality measures by gender for both groups are shown in Table 9.4. Note that the values are for the congeneric scale scores and the unweighted POMS scores.
Table 9.4

Scale range, mean, standard deviation of mood and personality measures by group and gender.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Scale Range</th>
<th>Experimental Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Males&lt;sup&gt;a&lt;/sup&gt; M Females&lt;sup&gt;b&lt;/sup&gt; Total</td>
<td>Males&lt;sup&gt;c&lt;/sup&gt; Females&lt;sup&gt;d&lt;/sup&gt; Total</td>
</tr>
<tr>
<td></td>
<td>(SD)</td>
<td>(SD) (SD)</td>
<td>(SD) (SD) (SD)</td>
</tr>
<tr>
<td>POMS Anger</td>
<td>0-48</td>
<td>12.97 (9.64) 12.00 (9.41) 12.57 (9.52)</td>
<td>14.76 (8.57) 14.46 (11.31) 14.60 (10.03)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0-36</td>
<td>9.25 (5.10) 10.26 (5.28) 9.67 (5.18)</td>
<td>9.82 (6.62) 9.74 (6.75) 9.78 (6.65)</td>
</tr>
<tr>
<td>Depression</td>
<td>0-60</td>
<td>7.57 (8.57) 11.11 (9.01) 9.04 (8.90)</td>
<td>10.10 (8.98) 11.71 (8.92) 10.93 (8.94)</td>
</tr>
<tr>
<td>Personality Scales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Original MAPI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhibited</td>
<td>0-41</td>
<td></td>
<td>11.81 (6.68) 11.17 (5.07) 11.48 (5.88)</td>
</tr>
<tr>
<td>Inhibition</td>
<td>0-.95</td>
<td>.15 (.21) .19 (.22) .17 (.21)</td>
<td>.20 (.27) .21 (.26) .21 (.26)</td>
</tr>
<tr>
<td>Introversion</td>
<td>0-2.71</td>
<td>.50 (.72) .74 (.92) .60 (.81)</td>
<td>.60 (.86) .56 (.63) .58 (.75)</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>0-2.37</td>
<td>.81 (.90) .82 (.88) .81 (.89)</td>
<td>.89 (.86) .81 (.82) .85 (.84)</td>
</tr>
</tbody>
</table>

Note. POMS = Profile of Mood States Inventory; MAPI = Millon Adolescent Personality Inventory. MAPI Inhibited Scale values not available for Experimental Group at follow up.

<sup>a</sup>n = 79; <sup>b</sup>n = 56; <sup>c</sup>n = 45; <sup>d</sup>n = 48.
No adolescent norms are available for the POMS. However, in an Australian study, Smith (1994) reported scores for 200 undergraduate psychology students with a mean age of 26.9 years of whom 76% female. Smith found a mean score of 16.3 ($SD = 10.6$) for Anxiety, and a mean score of 9.8 ($SD = 6.6$) for Depression. The means for Depression for both groups in the current study were similar to that of Smith. The means for Anxiety in the current study were slightly lower than in the Smith study. Mean values for both groups were similar to means for the Experimental Group at Phase 1.

The original Inhibited Scale score of the MAPI was calculated for the Control Group in order to compare the mean score for this sample with MAPI norms. The mean scale score found in this research was similar to the mean scale score found in the normative group. Males in the normative group had a mean of 12 ($SD$ not given), and females in the normative group had a mean of 13. Both the mean of the original MAPI Inhibited Scale and the mean of the congeneric Inhibition Scale used in this research are also presented in Table 9.4.

9.9.3 Assessment of suicidal behaviour. Students were assessed on the 8 original characteristics of suicidal behaviour, and the added ideation question. Endorsement frequencies of the suicide behaviour items by gender are given in Table 9.5. Endorsement frequencies for the Experimental Group at Phase 3 were lower than frequencies found at either Phase 1 or for the Control Group in four categories: believe life not worth living, ideation, have a general plan for ending my life, and have a detailed plan for ending my life. Endorsement frequencies for the Control Group were similar to the endorsement frequencies of the Experimental Group at Phase 1.
Table 9.5

*Endorsement frequency by group and gender for suicidal behaviour items.*

<table>
<thead>
<tr>
<th>Item</th>
<th>Experimental Group (%)</th>
<th>Control Group (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Females&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>I sometimes believe life is not worth living.</td>
<td>7.59</td>
<td>19.64</td>
</tr>
<tr>
<td>No one would miss me if I was not here.</td>
<td>13.92</td>
<td>15.18</td>
</tr>
<tr>
<td>I often think about ending my life.</td>
<td>3.80</td>
<td>8.04</td>
</tr>
<tr>
<td>I have a general plan for how to end my life.</td>
<td>5.70</td>
<td>1.79</td>
</tr>
<tr>
<td>I have deliberately injured or harmed myself.</td>
<td>13.92</td>
<td>8.93</td>
</tr>
<tr>
<td>I have told at least one other person that I am going to take my life.</td>
<td>6.96</td>
<td>6.25</td>
</tr>
<tr>
<td>I have tried to kill myself.</td>
<td>3.80</td>
<td>2.68</td>
</tr>
<tr>
<td>I have a detailed plan for how to end my life.</td>
<td>0.00</td>
<td>0.89</td>
</tr>
<tr>
<td>I have thought about ending my life.</td>
<td>18.99</td>
<td>16.07</td>
</tr>
</tbody>
</table>

*Note: *<sup>a</sup>*N = 79; *<sup>b</sup>*N = 56; *<sup>c</sup>*N = 45; *<sup>d</sup>*N = 48

Endorsement frequencies for both the Experimental Group and the Control Group were somewhat below norms for a US sample (Reynolds, 1987) for the items: no one would miss me (25%) and revealing intent to another (11%). Endorsement frequencies for the Experimental Group alone were also below norms for the item life not worth living (26%). The mean ages of the Australian students in both the Experimental Group (mean age = 15.9 years) and in the Control Group (mean age = 15.8 years) in the current research were a similar age to US students (mean age = 16.1 years).
Endorsement frequencies found in this study, for both groups, were comparable to the frequencies found in previously reviewed research for the items: life not worth living, revealing intent to another, self-harm, and attempting (eg., Garrison et al., 1991; Martin et al. 1995; Pronovost et al., 1990; Rubenstein et al., 1989; Tousignant et al., 1993). Endorsement frequencies for the Experimental Group were also comparable to the frequencies found in previous studies for the items: ideation and having plans. However, endorsement frequencies for the Control Group were higher than those found in previous studies for the items: ideation and having plans. The endorsement frequencies for the extra ideation question asked of the Experimental Group at Phase 3 were similar to the frequencies given by the Control Group for the Phase 1 ideation question, and higher than those found in previous studies. By contrast, lower endorsement frequencies were found in both groups than frequencies found by Pearce and Martin (1994a) for the items: ideation (49%), revealing intent to another (13%), self-harm (30%), and attempting suicide (9%). Pearce and Martin also used an Australian sample of similar age (mean age = 15.8 years) to the current samples. Students were from an urban area, however.

9.10 Test-Retest Reliability

Test-retest reliabilities across a 12-month interval were calculated for all 11 scales used in the study. Values for the PBI scales were: .48 for Mother Care, .61 for Mother Protection, .55 for Father Care, and .49 for Father Protection. Results are lower than the 3-week test-retest reliabilities established for the PBI for Care (.76) and Protection (.63; Parker, et al., 1979). No longer-term reliabilities are given. Test-retest reliabilities for
the POMS scales were: .44 for Anger, .49 for Anxiety, and .54 for Depression. Results were comparable to test-retest reliabilities found for the POMS scales (ranging between .43 and .53) over a 6-week period (McNair et al., 1992).

Test-retest reliabilities for the congeneric personality scales were: .60 for Introversion, .57 for Impulsivity, and .50 for Inhibition. The test-retest reliability for Suicidality was .42, lower than the test-retest reliability found for the SIQ (.72 over a 4-week interval). However, the time frame for this study was over 12 months, and with a much smaller sample. Overall, test-retest reliabilities display reasonable stability.

9.11 Analyses Using SEM

Intercorrelations between all measures used in the SEM analyses are given in Table 9.6 for the Experimental Group for Phase 3 and in Table 9.7 for the Control Group. As with all SEM, analyses are based on covariance structures (Byrne, 2001).

9.11.1 Tests for consistency of model fit. Using SEM, the core model and the extended model established in Phase 1 were tested on the Phase 3 data for the Experimental Group and the baseline data for the Control Group. For the Experimental Group, the Phase 3 core model yielded $\chi^2(24, N = 135) = 25.69, p = .369, \chi^2/df = 1.07$, GFI = .96, IFI = .99, and RMSEA < .03. All fit measures met the criteria, indicating excellent fit (Byrne, 2001). This model is shown in Figure 9.2. Four pathways retained very similar regression weights to those at Phase 1 and remained significant. The other five pathways were no longer significant. The core model explained 34% of the variance in Suicidality at Phase 3 compared with 44% of the variance at Phase 1.
Table 9.6

*Intercorrelations of model measures for the Experimental Group at Phase 3*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Loss</td>
<td>0.029</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Poor Mothering</td>
<td>-0.008</td>
<td>0.108</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Poor Fathering</td>
<td>0.109</td>
<td>0.023</td>
<td>0.375**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Inhibition</td>
<td>0.097</td>
<td>0.115</td>
<td>0.128</td>
<td>0.246**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Anger</td>
<td>-0.033</td>
<td>0.007</td>
<td>0.306***</td>
<td>0.311***</td>
<td>0.302***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Anxiety</td>
<td>0.143</td>
<td>0.006</td>
<td>0.235**</td>
<td>0.287**</td>
<td>0.398***</td>
<td>0.709***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Introversion</td>
<td>0.151</td>
<td>-0.013</td>
<td>0.255**</td>
<td>0.341***</td>
<td>0.509***</td>
<td>0.299***</td>
<td>0.367***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Impulsivity</td>
<td>0.010</td>
<td>0.035</td>
<td>0.049</td>
<td>0.021</td>
<td>0.182*</td>
<td>0.346***</td>
<td>0.222*</td>
<td>0.092</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Depression</td>
<td>0.224**</td>
<td>0.034</td>
<td>0.266**</td>
<td>0.375***</td>
<td>0.486***</td>
<td>0.714***</td>
<td>0.727***</td>
<td>0.448***</td>
<td>0.239**</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>11. Suicidality</td>
<td>-0.023</td>
<td>-0.101</td>
<td>0.235**</td>
<td>0.165</td>
<td>0.315***</td>
<td>0.399***</td>
<td>0.346***</td>
<td>0.446***</td>
<td>0.156</td>
<td>0.470***</td>
<td>1.000</td>
</tr>
</tbody>
</table>

*Note: a: 1 = male, 2 = female; * p < .05, ** p < .01, *** p < .001.*
Figure 9.2. The core model at Phase 3 for the Experimental Group.

Note. Dotted lines indicate non-significant pathways. * $p < .05$, ** $p < .01$, *** $p < .001$.

The extended model for the Experimental Group at Phase 3 yielded $\chi^2(59, N = 135) = 88.66, p = .008$, $\chi^2/df = 1.50$, $GFI = .91$, $IFI = .95$, and $RMSEA = .06$. Three of the four fit measures met the criteria, and the RMSEA was acceptable, indicating very satisfactory fit (Byrne, 2001). This model is shown in Figure 9.3. Most regression weights remained similar to their respective values at Phase 1. Six pathways were no longer significant. Anger contributed slightly more to Depression at Phase 3 than at Phase 1 (.52), and Inhibition contributed slightly less to Depression at Phase 3 than at Phase 1 (.50). The extended model predicted 34% of the variance at Phase 3 compared with 43% of the variance at Phase 1. The modification indices at Phase 3 indicated that adding a pathway from Gender to Anger would improve model fit.
Figure 9.3. The extended model at Phase 3 for the Experimental Group.

Note. Dotted lines indicate non-significant pathways.

* p < .05, ** p < .01, *** p < .001.

When the models were initially tested on the Control Group data, both models were unidentified. An identification problem arises when a proposed model is unable to generate unique estimates because there are fewer equations than unknowns (Hair et al., 1995). One reason for this is when the sample size is small, as with the Control Group. To correct this misspecification, one further constraint was included in the model, as recommended by Hair et al. The error terms for Mother Care and Father Care were correlated, which was supported by both theory and the modification indices. This minor correction produced an identified model.
Table 9.7

*Intercorrelations of model measures for the Control Group*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Loss</td>
<td>-.230*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Poor Mothering</td>
<td>.039</td>
<td>.020</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Poor Fathering</td>
<td>-.092</td>
<td>.138</td>
<td>.347***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Inhibition</td>
<td>.007</td>
<td>.096</td>
<td>.410***</td>
<td>.252*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Anger</td>
<td>-.006</td>
<td>.308**</td>
<td>.208*</td>
<td>.269**</td>
<td>.312**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Anxiety</td>
<td>-.010</td>
<td>.192</td>
<td>.300**</td>
<td>.353**</td>
<td>.404***</td>
<td>.690***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Introversion</td>
<td>-.022</td>
<td>-.025</td>
<td>.112</td>
<td>.255*</td>
<td>.508***</td>
<td>.226*</td>
<td>.392***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Impulsivity</td>
<td>-.049</td>
<td>.245*</td>
<td>.335**</td>
<td>.071</td>
<td>.134</td>
<td>.325**</td>
<td>.051</td>
<td>-.083</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Depression</td>
<td>.127</td>
<td>.180</td>
<td>.378***</td>
<td>.437***</td>
<td>.494***</td>
<td>.685***</td>
<td>.824***</td>
<td>.460***</td>
<td>.172</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>11. Suicidality</td>
<td>-.026</td>
<td>.177</td>
<td>.420***</td>
<td>.300**</td>
<td>.478***</td>
<td>.451***</td>
<td>.382***</td>
<td>.218*</td>
<td>.268**</td>
<td>.537***</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Note: a: 1 = male, 2 = female; * $p < .05$, ** $p < .01$, *** $p < .001$.  

The core model for the Control Group yielded $\chi^2(23, N = 93) = 46.61, p = .003$, $\chi^2/df = 2.02$, GFI = .90, IFI = .88, and RMSEA = .11. Only two of the fit measures met the criteria, indicating mediocre fit (Byrne, 2001). This model is shown in Figure 9.4. Five pathways were significant, and the other four pathways were not significant. The core model explained 32% of the variance in Suicidality for the Control Group.

![Figure 9.4. The core model for the Control Group.](chart1)

*Note.* Dotted lines indicate non-significant pathways.

*p < .05, **p < .01, ***p < .001.*

The extended model for the Control Group yielded $\chi^2(58, N = 93) = 129.93, p = .000, \chi^2/df = 2.02$, GFI = .83, IFI = .83, and RMSEA = .12. Only one fit measure met the criteria, indicating poor fit (Byrne, 2001). However, most regression weights remained similar to the values obtained for the Phase 1 model. Four pathways were no longer
significant. This model is shown in Figure 9.5. The extended model explained 34% of the variance in Suicidality for the Control Group. The modification indices indicated that adding a pathway from Anxiety to Depression would improve fit.

![Diagram](image_url)

**Figure 9.5.** The extended model for the Control Group.

**Note.** Dotted lines indicate non-significant pathways.

*p < .05, **p < .01, ***p < .001.

In summary, Table 9.8 lists the regression weights for the Experimental Group across time and for the Control Group. When the respective regression weights for the pathways in the extended model are compared across both group and time, 10 of the 16 pathways remained significant across time and across 2 different samples. Further, their regression weights maintain surprising stability.
Table 9.8.

The pattern of extended model regression weights across time and group

<table>
<thead>
<tr>
<th>Pathway</th>
<th>E1</th>
<th>E3</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss(^a) to Poor Mothering</td>
<td>.28***</td>
<td>.14</td>
<td>.00</td>
</tr>
<tr>
<td>Poor Mothering to Poor Fathering</td>
<td>.58***</td>
<td>.42***</td>
<td>.33**</td>
</tr>
<tr>
<td>Poor Mothering to Inhibition</td>
<td>.33***</td>
<td>.17</td>
<td>.47***</td>
</tr>
<tr>
<td>Poor Fathering to Inhibition</td>
<td>.29**</td>
<td>.34**</td>
<td>.27*</td>
</tr>
<tr>
<td>Poor Fathering to Impulsivity</td>
<td>.26**</td>
<td>.08</td>
<td>.08</td>
</tr>
<tr>
<td>Loss(^a) to Impulsivity</td>
<td>.25**</td>
<td>.04</td>
<td>.34**</td>
</tr>
<tr>
<td>Impulsivity to Anger</td>
<td>.17*</td>
<td>.25***</td>
<td>.39***</td>
</tr>
<tr>
<td>Inhibition to Introversion</td>
<td>.90***</td>
<td>.88***</td>
<td>.82***</td>
</tr>
<tr>
<td>Introversion to Anxiety</td>
<td>.68***</td>
<td>.77***</td>
<td>.67***</td>
</tr>
<tr>
<td>Anxiety to Anger</td>
<td>.75***</td>
<td>.78***</td>
<td>.77***</td>
</tr>
<tr>
<td>Anger to Depression</td>
<td>.51***</td>
<td>.63***</td>
<td>.59***</td>
</tr>
<tr>
<td>Inhibition to Depression</td>
<td>.50***</td>
<td>.39***</td>
<td>.47***</td>
</tr>
<tr>
<td>Gender to Inhibition</td>
<td>.27***</td>
<td>.15</td>
<td>.01</td>
</tr>
<tr>
<td>Gender to Depression</td>
<td>.15***</td>
<td>.17**</td>
<td>.14*</td>
</tr>
<tr>
<td>Depression to Suicidality</td>
<td>.57***</td>
<td>.58***</td>
<td>.56***</td>
</tr>
<tr>
<td>Poor Fathering to Suicidality</td>
<td>.32***</td>
<td>.07</td>
<td>.15</td>
</tr>
</tbody>
</table>

Note. \(^a\)Loss means Childhood Parental Loss.

\(* p < .05, \ ** p < .01, \ *** p < .001.\)
Figure 9.6 shows the model with the 10 pathways which remained significant both across time and across 2 samples. The dotted lines show the 2 pathways which were significant at baseline for the Experimental Group and for Control Group, but not for the Experimental Group at Phase 3 (postvention).

![Diagram](image)

*Figure 9.6. The extended model showing pathways remaining significant across time and across 2 samples.*

*Note. Dotted lines represent pathways significant across two samples.*

9.11.2 *A comparison of latent variable means.* The means for the Experimental Group for Phase 3 were compared first with the means for the Experimental Group at Phase 1 and then with the means for the Control Group. These analyses were conducted in the same way as at Phase 2, using a critical ratio (CR) of 1.96 to establish a significant difference between group means for each latent variable. It is important to note that the overall model fit may still be very acceptable.

A comparison between Phase 3 data and Phase 1 data for the Experimental Group
extended model yielded $\chi^2(140, N = 135, 185) = 240.25, p = .000, \chi^2/df = 1.72, \text{CFI} = .99, \text{IFI} = .99,$ and $\text{RMSEA} < .04$. All four fit measures met the criteria, indicating excellent fit (Byrne, 2001). Two means were significantly different as indicated by the critical ratios. The latent variable mean for Inhibition was significantly lower at Phase 3 than at Phase 1 (CR = 2.56), and the latent variable mean for Anxiety was significantly higher at Phase 3 than at Phase 1 (CR = 3.12).

When the Experimental Group data at Phase 3 was compared with the Control Group data, the model was unidentified. The regression weights from Mother Care to Poor Mothering and from Father Care to Poor Fathering were greater than 1. Correlating the error terms for Mother Care and Father Care corrected the misspecification, as recommended by Hair et al. (1995). The extended model yielded $\chi^2(140, N = 135, 93) = 247.30, p = .000, \chi^2/df = 1.76, \text{CFI} = .98, \text{IFI} = .98,$ and $\text{RMSEA} < .05$. All four fit measures met the criteria, indicating excellent fit (Byrne, 2001). One critical ratio showed a significant difference. The latent variable mean for Poor Fathering was significantly higher for the Control Group than for the Experimental Group at Phase 3 (CR = 2.74).

Latent variable means remained generally unchanged, then, across time and groups, with three exceptions. Following the reasoning outlined previously in Design, changes in Inhibition and Anxiety were attributable to an age effect. The differences were evident across time for the Experimental Group but not evident versus a Control Group of similar age. The difference in Poor Fathering was attributable to an unknown cohort effect. The difference was not evident across time for the Experimental Group but was evident versus a Control Group of similar age.
9.11.3 *Tests for effect of exposure time spent on the internet site.* Overall, students spent little time on the site. One student (.7%) in the Experimental Group had spent an extra five hours or more on the site since the Phase 1 testing, 2 students (1.5%) spent between three and five hours on the site, 5 students (3.7%) spent between two and three hours on the site, 33 students (24.3%) spent up to two hours on the site, and 95 students (69.9%) spent no extra time at all on the site. Nevertheless, it was decided to assess for any long-term effect due to exposure time on the *Reach Out!* internet site.

A test was conducted using the two structural equation models developed at Phase 2 which were consistent with recommendations by Hoyle and Smith (1994) and by Arbuckle and Wothke (1999). It was decided to test initially for a site exposure effect using the core model only, and to test the effect only for Depression and Suicidality, as these are the final factors in the model. If there was a significant effect with the core model for either Depression or Suicidality, then the extended model would also be tested. If no effect was found for the core model, none would be found using the extended model.

To test for a significant effect from site exposure time on Depression at Phase 3, the core model at Phase 1 was connected to the core model at Phase 3 via a pathway between Depression at Phase 1 and Depression at Phase 3. The resulting regression weight determined whether Depression at Phase 1 had a significant effect on Depression at Phase 3, without site exposure time being included in the model. The pathway from Depression at Phase 1 to Depression at Phase 3 was significant. Depression at Phase 1 did, indeed, significantly influence the level of Depression at Phase 3.

Site exposure time was then incorporated into the model as an intervening factor
between Depression at Phase 1 and Depression at Phase 3, to determine whether the extent of site exposure had a significant effect on Depression at Phase 3. A simplified model is shown in Figure 9.7. Loss and Gender were not included in the model as they remained invariant over time.

![Diagram](image)

**Figure 9.7.** Structural equation model used to test for long-term effect of site exposure time on Depression.

*Note.* Dotted lines indicate non-significant pathways. ***p < .001.

When site exposure time was included in the model, the pathway from site exposure time to Depression at Phase 3 was non-significant. Therefore, the extent of exposure to the *Reach Out!* internet site had no significant effect on levels of Depression at Phase 3.

This same strategy was repeated to test for a site exposure effect on Suicidality. A simplified model which includes site exposure time is shown in Figure 9.8.
Figure 9.8. Structural equation model used to test for long-term effect of site exposure time on Suicidality.

Note. Dotted lines indicate non-significant pathways. *** $p < .001$.

The pathway from Suicidality at Phase 1 to Suicidality at Phase 3, without site exposure time included in the model, was significant. Suicidality at Phase 1 did significantly influence the level of Suicidality at Phase 3. However, when site exposure time was included in the core model, the pathway from site exposure time to Suicidality was non-significant. Therefore, the extent of exposure to the Reach Out! internet site had no significant effect on level of Suicidality at Phase 3.

9.12 Analyses Using Manova

9.12.1 Mean differences within the high-risk subgroup. At Phase 2, significant differences in some risk factors were established for high-risk adolescents compared with their Phase 1 measures. Similar comparisons were pursued for the same subgroup at Phase 3. The sample size was again too small to use structural equation modelling.
Therefore, a repeated-measures Manova was conducted on the seven risk measures (i.e., Inhibition, Anger, Anxiety, Introversion, Impulsivity, Depression, and Suicidality) for the 21 students in the Experimental Group with Depression scores above the first standard deviation (.99, N = 21) at Phase 1, who also participated at Phase 3. Significant global tests were followed by univariate F tests to establish which measures were significantly different across time, using a .05 probability level. The univariate F tests employed a Bonferroni critical value for significance of $F(1, 19) = 10.1$, derived from an alpha level of .007 where there were seven measures, as recommended by Tabachnick and Fidell (1996).

There was a significant difference at the global level between Phase 1 and Phase 3: $F(7, 13) = 7.30, p < .01$, Wilk’s Lambda = .22, partial eta squared = .79. When the results for the dependent variables were considered separately using the Bonferroni adjustment, students at Phase 3 had significantly lower scores in Inhibition ($M = .27, SD = .21$) than at Phase 1 ($M = .63, SD = .27$): $F(1, 20) = 29.68, p < .001$, and partial eta squared = .60. Students at Phase 3 also had significantly lower scores for Depression ($M = .91, SD = .51$) than at Phase 1 ($M = 1.45, SD = .23$): $F(1, 20) = 24.52, p < .001$, and partial eta squared = .55. Both values for partial eta squared indicate strong power (Cohen, 1988). Further, all other risk measures for the high-risk subgroup also improved from Phase 1 to Phase 3, even though differences did not reach significance.

9.12.2 Location differences. SEM was not used to test for the effect of location on risk factors due to the relatively small sample sizes. Therefore, a between-groups Manova was used to evaluate the effect of location on eleven measures (i.e., Mother Care, Father Care, Mother Protection, Father Protection, Inhibition, Anger, Anxiety,
Introversion, Impulsivity, Depression, and Suicidality). Significant global tests were followed up by univariate F tests to establish which specific measures were significantly different between groups. No significant effect was found for location for the Experimental Group at the global level: $F(11, 123) = 1.28, p = .243$; Wilk’s Lambda = .90; partial eta squared = .10. Likewise, no significant effect was found for location for the Control Group at the global level: $F(11, 81) = .83, p = .609$; Wilk’s Lambda = .90; partial eta squared = .10. Partial eta squared indicates a moderate level of power for both tests (Cohen, 1988).

Discussion

The aims of Phase 3 were (1) to test the best-fitting models developed at Phase 1 for consistency of model fit over a 12-month period, and (2) to evaluate the long-term effects of a web-based prevention strategy upon the previously established models of risk factors for adolescent suicide. Based on findings at Phase 2 that identified significant short-term change in a high-risk subgroup, analyses for long-term intervention effects were conducted on both the full sample and on the subgroup. Further aims of Phase 3 were (3) to test the invariance of the model on a new sample, (4) to assess for effect of age on the risk factors, and (5) to investigate location differences for the risk factors.

At Phase 3, results showed that both the core model of risk factors and the extended model of risk factors remained relatively consistent across a 12-month period for the Experimental Group and for another sample. Ten of the 16 pathways remained significant across time and samples. Depression remained invariant as the only direct
predictor of Suicidality at Phase 3. Parenting factors remained as important antecedents to the personality factors, which in turn influenced mood factors and subsequent suicidal behaviour. Of the six non-significant pathways, four pathways appeared to lose significance due to an age effect, one pathway may have exhibited an intervention effect, and one pathway probably exhibited an unknown cohort effect.

When latent variable means were evaluated for long-term intervention effects or age effects, an age effect was found for Anxiety and Inhibition. Anxiety increased with age, and Inhibition decreased with age. When measure means were compared for students in the high-risk subgroup, Inhibition and Depression decreased significantly from Phase 1 to Phase 3. The change in Inhibition is argued as an age effect, but the change in Depression is considered a likely intervention effect. An unknown cohort effect was also evident for the Control Group who reported lower levels of Father Care.

The Discussion will proceed by addressing in turn: consistency of model fit, effects on means of risk factors, location differences, and conclusions.

9.13 Consistency of Model Fit

Retesting of the models after 12 months with the Experimental Group, and testing with a second sample of adolescents, continued to support an indirect model of risk factors. In both the core models and extended models for the Experimental and Control Groups, Depression remained the only direct predictor of Suicidality. Ten of the sixteen pathways in the extended model remained significant both across time and over different samples, and their respective regression weights maintained notable stability. Nine of these ten pathways were significant in both the core model and the extended model for
both groups. The pathway from Gender to Depression, however, was significant only for the extended models, which will be discussed later.

The six pathways which lost significance were always similar in both the core and extended models for each group. Therefore, only differences between groups will be addressed. Four pathways were not significant for either the Experimental Group at Phase 3 or for the Control Group: Childhood Parental Loss to Poor Mothering, Poor Fathering to Suicidality, Poor Fathering to Impulsivity, and Gender to Inhibition. Next, the pathways from Childhood Parental Loss to Impulsivity and from Poor Mothering to Inhibition were non-significant for the Experimental Group, but significant for the Control Group.

The four pathways that lost significance for both the Experimental and Control Groups are argued to demonstrate an age effect. The reason is that significant paths were obtained only for the sample of students who were one year younger, namely the Experimental Group at Phase 1.

The first pathway that probably showed an age effect was that from Childhood Parental Loss to Poor Mothering. It should be noted, however, that data concerning loss was collected one year earlier for the Experimental Group, whereas the data was collected for the Control Group at the same time as their other measures. Thus, this research did not identify students in the Experimental Group whose parents had separated in the last 12 months. Loss of significance in the pathway for the Experimental Group might therefore be attributed to the effects of such loss diminishing over time, as mothers adapted to the situation and resumed their usual parenting.

However, the pathway was also non-significant for the Control Group, which
makes the preceding explanation less likely. The decreased influence of Loss on Poor Mothering is, therefore, more likely due to age. Perhaps as adolescents mature, parental separation has less effect on their perceptions of mothering. With increasing cognitive abilities, older adolescents may be better able to differentiate between parenting issues and marital issues, as supported by developmental theory (Berger & Thompson, 1995). In particular, older adolescents may be better able to distinguish between how Mum cares for them and how Mum responds to separation.

In the only known research which investigated childhood parental loss separately from other family factors, Martin et al. (1995) found a significant correlation between loss and family dysfunction. The student sample used in the research by Martin et al. had a mean age of 14.8 years, one year younger than the Phase 3 samples. Taken together, results may suggest that for younger students the family dysfunction associated with Childhood Parental Loss influences perceptions of mothering.

The second pathway to exhibit an age effect was that from Poor Fathering to Suicidality. It thus seems that for older students, Poor Fathering has only indirect links with Suicidality via Inhibition and Depression compared with a direct link for the younger students at Phase 1. Similar to the previous argument, as adolescents mature cognitively, they may be better able to differentiate between parenting issues and their more general view of the world. How Dad cares for them still impacts on how they feel about themselves (i.e., Inhibition), but no longer makes them feel that life in general is not worth living and that suicide is the solution.

Alternatively, the small sample size remains a consideration for the Control Group. Three previous studies found significant zero-order correlations between parenting and
suicidality (i.e., Adam et al., 1994; Martin & Waite, 1994; Tousignant et al., 1993). Adam et al. and Martin and Waite used student samples younger than the Phase 3 Control Group (14.9 years and 15.0 years, respectively), but Tousignant et al. used a sample of similar mean age (16.3 years). Further, Tousignant et al. found that low Father Care was more significant than low Mother Care, suggesting that this pathway may be as relevant for older students as for younger ones. The regression weight for the Control Group in the current study was just below significance and may have become significant with a larger sample. It thus seems that the pathway from Poor Fathering to Suicidality may well belong in the model. By contrast, the Experimental Group displayed neither a significant zero-order correlation nor a significant pathway in the model between Poor Fathering and Suicidality. If the pathway from Poor Fathering to Suicidality were accepted as significant for the Control Group, then results in the current study would demonstrate for this pathway an intervention effect rather than an age effect.

A third pathway to display age effects was that from Gender to Inhibition, indicating that as adolescents mature, gender exerts less influence on a sense of personal cohesion and future direction (i.e., Inhibition). Females initially had a higher level of Inhibition at Phase 1 than did males. It was possible that either males had increased their scores with age or that females had decreased their scores with age. In fact, Inhibition decreased from .33 (SD = .33) at Phase 1 to .19 (SD = .22) at Phase 3 for females while remaining at a fairly constant level for males, namely .18 (SD = .24) at Phase 1 and .15 (SD = .21) at Phase 3.

One reason proposed at Phase 1 for females' greater Inhibition was that females' greater maturity at this stage of development caused them to reflect more about life
issues, resulting in a greater sense of personal turmoil. An alternative reason was that females began experiencing hormonal changes and associated emotional extremes two years earlier than males (Berger & Thompson, 1995), resulting in increased emotional lability. Another alternative reason was that females experience more sexual assault than do males. Considering the significant decrease in Inhibition for females across time, and the fact that sexual abuse issues recur across the life span (Weiss et al., 1999), it seems most likely to conclude that females experienced emotionally disruptive hormonal changes one year earlier. As menarche settled for them and they adjusted to their new physiological maturity, they appeared to feel better about themselves and their future directions.

A fourth pathway to show an age effect was that from Poor Fathering to Impulsivity. As with Suicidality, as adolescents mature in their cognitive skills, they may be better able to separate their broader social relationships from their father’s perceived behaviour towards them. At Year-9 level, adolescents may see Dad as representative of the rest of the world, and expect others to respond as Dad responds. By Year-10, however, it seems that adolescents are better able to distinguish between Dad’s perceived behaviour and others’ behaviour. How Dad cares for them still impacts on how adolescents feel about themselves (i.e., Inhibition), but seems to no longer influence their cooperation with others (i.e., Impulsivity).

The reason for change in significance of the pathway from Childhood Parental Loss to Impulsivity is less clear. The pathway retained significance for the Control Group, but not for the Experimental Group. As noted previously, data on Loss for the Experimental Group alone was collected 12 months earlier. Thus the association may
have diminished because students who lost a parent in the past 12 months were not identified as such in the Experimental Group. It is probable, then, that Loss does influence Impulsivity, and that the pathway from Childhood Parental Loss to Impulsivity should remain in the model.

Whilst Poor Fathering, then, no longer impacts on an adolescent’s cooperative interactions with others, it seems that Childhood Parental Loss probably remains a precursor to Impulsivity. With increased cognitive skills, older adolescents may understand that Dad’s own emotional turmoil and consequent withdrawal of care as he proceeds through separation are neither personally directed at the adolescent nor representative of potential interactions with others. Nevertheless, the actual loss of Dad’s presence and more direct emotional support, if he moves out of the family home, may directly generate rebellion and lack of cooperation.

The pathway from Poor Mothering to Inhibition is argued to demonstrate an intervention effect in that it retained significance for the Control Group but not for the Experimental Group. Attenuation of the link for the Experimental Group may arise from the significant decrease in Inhibition scores from Phase 1 to Phase 3. Thus the Reach Out! Internet site may make Inhibition less susceptible to the influence of Poor Mothering. It may be that the fact sheets or personal stories, which suggest ways of coping with negative feelings, are taken up by adolescents to help them deal with difficult situations. Alternatively, adolescents may be reassured by the knowledge that others also feel uncertain about themselves, but do find solutions for their doubts. Either way, the information would enable adolescents to feel better about themselves (i.e., Inhibition), regardless of the quality of mothering they receive.
Further, writing out negative emotions on *Scream It* or creating positive hopes for the future on *Dream It* may help release negative feelings and build optimism to counter the undermining effects on self identity from perceived poor mothering. Nevertheless, the models at Phase 3 support the premise that without intervention, poor mothering erodes an adolescent’s sense of personal direction and personal cohesion. Current findings also support the results of Kienhorst et al. (1992), who also demonstrated that those who attempted suicide reported significantly greater parental conflict, less parental support, and greater negativity about the future than did non-attempters. Therefore, the pathway from Poor Mothering to Inhibition should remain in the model of risk factors as a strong pathway if intervention does not occur.

A final consideration is the pathway from Gender to Depression, which was non-significant in the core model for both groups, but significant in the extended model for both groups. It was noted in Phase 1 that other research exploring a significant relationship between Gender and Depression was inconsistent, and that this difference may be due to differing content in the Depression measures (e.g., Garrison et al., 1991; Martin et al., 1995). The results of Phase 2 rendered this possibility less plausible as the same instruments were used with the data at both Phases 1 and 2, but at Phase 2, the pathway between Gender and Depression in the extended model no longer reached significance.

At Phase 3, the pathways from Gender to Depression were only slightly below significance in the core models for each group. In the extended models, the contribution of Inhibition to Depression decreased from .50 at Phase 1 to .39 at Phase 3, which may have affected the pathway from Gender to Depression. Overall, the balance of previous
research indicates that gender does play a part in adolescent depression and suicidality (Garrison et al., 1991; Martin et al., 1995; Pronovost et al., 1990; Rubenstein et al., 1989). Further, in the current study, although the regression weight remained small across time and with the two samples, the regression weight also remained stable across time and group. It seems, then, that Gender does make a small but definite contribution to Depression, and that this pathway should remain in the model.

9.14 Effects on Means of Risk Factors

Latent variable means were analysed for differences that could be reasoned as an intervention effect, an age effect, or a cohort effect. For the Experimental Group across time, Anxiety increased significantly and Inhibition decreased significantly. Yet the same differences were not evident between the Experimental Group at Phase 3 and a Control Group of similar age. It is thus reasoned that the changes in both Anxiety and Inhibition demonstrate an age effect. Also, Father Care was significantly higher for the Experimental Group at Phase 3 than for a Control Group of similar age. Yet the same difference was not evident across time from Phase 1 to Phase 3 for the Experimental Group. According to the reasoning in Table 9.2, the difference for Father Care is attributable to an unknown cohort effect.

In moving from Year 9 to Year 10, the increased pressures of school demands, hormonal changes, and the social pressures of relationships may all contribute to increasing anxiety. Larson and Ham (1993) found that negative life events increased steadily from childhood through adolescence, and that teenagers seemed to react with greater emotion than did children. These negative life events included getting along with
parents, disciplinary actions at school, and breaking up with boyfriends or girlfriends. Another form of negative life event experienced by adolescents, identified by Paikoff and Brooks-Gunn (1991), was a rise in parent-child conflict as adolescents move to an increased state of independence from parents.

As adolescents mature and their cognitive skills develop, they may well experience a greater sense of inner cohesion and future direction (i.e., decreased Inhibition). The finding contrasts with previous research that demonstrated risk factors to increase with age (Husain & Vandiver, 1984; Kosky, Silburn, et al., 1990; Ritter, 1990). However, none of the above studies included Inhibition or any similar construct as a factor. It may be that different types of risk factors have different relationships with age, either increasing or decreasing as adolescents mature.

The unknown cohort effect for Father Care was explored as an issue of sample composition. The Control Group had proportionally more regional females and rural males than did the Experimental Group. Thus, the means for Father Care were inspected by Gender and Location. However, regional females in the Control Group had a slightly higher mean score for Father Care than did those in the Experimental Group, which is incompatible with the difference. And although rural males in the Control Group had a slightly lower mean for Father Care than did those in the Experimental Group, they were underrepresented within the Control Group sample. Therefore, the sample composition does not explain the cohort effect, and the reason for the cohort effect remains unclear.

For the high-risk subgroup within the Experimental Group, the latent variable means of both Inhibition and Depression decreased significantly across time. It is reasonable to assume that the decrease in Inhibition is due to an age effect, as has been
argued for the sample as a whole. However, the decrease in Depression is possibly due to an intervention effect. Students in the high-risk sub-group were more likely to have revisited the site over 12 months than did other students, and spent more time on the Reach Out! site than did other students. The fact sheets and personal stories offer information about depression, specific ways of countering negative mood, and help to create a positive sense of well-being. Scream It and Dream It also encourage young people to release negative emotions and build hope for the future.

Intervention effects on depression are supported by previous research. Christensen, Griffiths, and Jorm (2004) used an Australian sample to investigate the effectiveness of two internet sites, BluePages and MoodGYM, to reduce depression. Participants were older (mean age = 36.4 years) than those in the current study, and showing psychological distress, scoring at least 22 on the Kessler Psychological Distress Scale (Kessler et al., 2002), a general measure of psychological disorder. Also, participants performed weekly activities on the internet site and, therefore, spent considerably more time on the site than did participants in the current study. Unlike the Reach Out! site, Bluepages offers only information, and MoodGYM is an interactive cognitive-behavioural program. Both sites significantly reduced symptoms of depression after 8 weeks, with the greatest improvement being demonstrated by those participants most at-risk, based on the self-report depression scale from the Centre of Epidemiologic Studies (Radloff, 1977). It seems that a variety of styles of internet sites can be helpful to people of varying ages who feel down, and that a comprehensive cognitive-behavioural program is not necessary to bring improvement. Also, the current study suggests that even a short time spent on a resource site can be helpful.
An issue remains of whether adolescents at risk would spontaneously access a website for assistance. One survey of students aged 13 to 19 years found that 18% accessed the internet for help when they felt sad or stressed (Gould, Munfakh, Lubell, Kleinman, & Parker, 2002). It thus appears that all secondary students would benefit from a brief introduction to useful sites and encouragement to access them. Nevertheless, some high-risk adolescents will use the internet as a resource even without an explicit introduction of the sort used in this research.

It should be noted that the change in Depression for the high-risk subgroup could also be due to regression towards the mean. That is, scores which are extreme will moderate toward the average over time. In order to evaluate whether regression towards the mean was a likely explanation, a repeated-measures Manova was performed for a low-risk subgroup on 7 measures (i.e., Inhibition, Anger, Anxiety, Introversion, Impulsivity, Depression, and Suicidality). Because there were no students with a depression score more than one standard deviation below the mean (mean = .48, $SD = .51$), those 25 students were chosen who had a Depression score of 0 at Phase 1. Nineteen of these students also participated at Phase 3. No significant differences between measures were found for the low-risk subgroup from Phase 1 to Phase 3: $F(7, 17) = .47, p > .05$, Wilk's Lambda = .95, and partial eta squared = .81. Therefore, it was concluded that the decrease in Depression across time by the high-risk subgroup was more likely due to the intervention.

It is also important to note that students generally did not return to spend time on the site. This feature may have been due to the demands of school scheduling and homework, that the site itself was not as appealing as it could be, or that accessing the
site at school was a stigma. Alternatively, the majority of students without problems may not have found the site particularly relevant.

9.15 Location Differences

A final aim of this research was to explore regional versus rural differences in adolescent risk factors. Location was not included as a risk factor in the structural equation models due to limited sample size. In Phase 1, students living in regional Victoria reported significantly higher levels of Anger, Anxiety, and Depression than did students living in rural Victoria. No differences were found in Phase 2 or Phase 3. It was suggested in Phase 1 that because of the social demographics peculiar to Geelong (i.e., the Pyramid collapse in the 1980’s), it was possible that economic factors influenced the results of this study. This explanation seems unlikely in that no differences were found for the Experimental Group only one month later, and no differences were found for either the Experimental Group or Control Group twelve months later.

It was further noted in Phase 1 that previous research found that men living in regional areas reported significantly more depression than men living in rural areas in the US Co-morbidity Survey, but that the main contributing factor was poverty, not locality. No difference was found for women (Diala and Muntaner, 2003). Paykel et al. (2003) found no significant regional/rural differences using the British National Morbidity Survey. The current research used samples with participants of a similar low to middling socioeconomic level, and would not expect to find location differences due to socioeconomic factors. Results suggest, then, that rural versus regional localities have
little impact on the adolescent risk factors explored in the current study.

9.16 Conclusions

In summary, long-term retesting of the risk models for suicidality demonstrated that they largely maintained consistency across both time and groups. Ten of the 16 pathways remained significant at twelve months follow-up, and two further pathways were argued to belong in the model. The other four pathways were reasoned to show age effects. Anxiety increased with age, and Inhibition decreased with age for the full sample. Further, for the high-risk subgroup, Inhibition exhibited an age effect, and Depression exhibited an intervention effect.

The Reach Out! internet site, then, demonstrated some effectiveness as a prevention strategy for adolescent depression, especially for the high-risk students. The confirmation of the models across time and sample offered further support for both Attachment Theory (Bowlby, 1969) and Millon’s theory of personality (1981). Findings of the entire study are discussed more fully in Chapter 11, particularly in relation to Bowlby’s Attachment Theory and Millon’s theory of adolescent personality. The overall consistency of the structural models, implications of the current research for both intervention and research, strengths and limitations of the research, and possibilities for future research directions will also be addressed.
Chapter 10: General Discussion and Conclusions

10.1 Summary of Findings

Previous research has identified a variety of risk factors involved in adolescent depression and suicidality. Very few studies, however, have explored relationships between the risk factors, nor investigated change in these factors over time. Phase 1 of this research developed two best-fitting models of risk factors, a core model and an extended model. The developed models helped to elucidate the relationships between selected family, personality, and mood factors implicated in adolescent suicidality. The extended model clearly demonstrated that family factors directly influenced personality factors, which in turn influenced mood factors, including depression, which then influenced suicidality. Further, results supported Attachment Theory (Bowlby, 1969), demonstrating that perceived parenting styles that are warm and not overly controlling are more conducive to an adolescent’s emotional well-being than are parenting styles that are cold and controlling. Results likewise supported Millon’s theory of personality (1981), demonstrating that parenting style influences a child’s personality.

Phase 2 investigated and affirmed the short-term consistency of the models developed in Phase 1, and investigated the short-term effectiveness of a psychoeducational web-based prevention strategy for reducing levels of risk factors. Analyses were conducted on both the full sample and on a high-risk subgroup within the sample. There was a significant effect for the prevention strategy for the full sample after one month; the risk factor Introversion decreased significantly. Further, levels of Inhibition and Suicidality decreased significantly for the high-risk subgroup, and a
decrease in Depression approached significance.

Phase 3 investigated both the long-term consistency of the models developed in Phase 1 and the invariance of the models on a second sample, the Control Group. Further, Phase 3 evaluated the long-term effectiveness of a psychoeducational web-based prevention strategy for reducing levels of risk factors, and investigated intervention and age effects. Results showed that both the core model of risk factors and the extended model of risk factors remained relatively consistent across a twelve-month period. Further, the structural equation models also remained relatively consistent when fitted to a second sample.

When latent variable means were evaluated for long-term intervention effects or age effects, an age effect was found for both Anxiety and Inhibition. Anxiety increased significantly with age, and Inhibition decreased. An unknown cohort effect was also evident for the Control Group, who reported significantly lower levels of Father Care than did the Experimental Group. When measure means were compared for students in the high-risk subgroup, a probable age effect was found for Inhibition, and a probable intervention effect was found for Depression. Inhibition decreased significantly with age for the subgroup as it had done for the full sample. Depression decreased significantly for the subgroup alone.

The Discussion will proceed with consideration of the overall consistency of the structural models, the relevance of the structural models to Attachment Theory, the relevance of the structural models to Millon’s theory of personality, implications of the current research for intervention, strengths and limitations of the research, future research directions, and final comments.
10.2 Overall Consistency of the Structural Models

Findings supported a robust model of risk factors for adolescent suicidality. Ten of the sixteen pathways in the developed structural model maintained validity across time and sample. The pathways were Poor Mothering to Poor Fathering, Poor Fathering to Inhibition, Inhibition to Depression, Inhibition to Introversion, Introversion to Anxiety, Anxiety to Anger, Impulsivity to Anger, Anger to Depression, Gender to Depression, and Depression to Suicidality. Four other pathways demonstrated an age effect that rendered them non-significant for the Year-10 adolescents. These age-affected pathways were Childhood Parental Loss to Poor Mothering, Poor Fathering to Impulsivity, Gender to Inhibition, and Poor Fathering to Suicidality.

The pathways from Poor Mothering to Inhibition and from Childhood Parental Loss to Impulsivity lost significance at Phase 3 for the Experimental Group only. It was argued that both pathways should remain in the model. The former pathway likely displayed an intervention effect. Attenuation of the link for the Experimental Group may have arisen from the significant decrease in Inhibition over the twelve months. Further, this pathway maintained significance for the Control Group. It was also noted that the data concerning Childhood Parental Loss did not include recent data for the Experimental Group and, therefore, exhibited possible methodological problems. The pathway from Loss to Impulsivity was significant at all other times and across samples.

Of the ten consistent pathways, the pathways from Poor Fathering to Inhibition and from Gender to Depression lost significance at Phase 2 for the Experimental Group, indicating either possible short-term intervention effects or chance fluctuations. Within
the broader context of results, and as previously argued, it is likely that both pathways are robust, and should remain in the model.

10.3 Implications of the Current Research for Theory

10.3.1 Relevance to Attachment Theory. The extended model offers clear support for Attachment Theory (Bowlby, 1969), and adds to the growing body of evidence that links the quality of attachment between child and caregiver to later behavioural and social outcomes. Results found that adolescents’ perceived parenting experience, based on measures of warmth and control, does affect the adolescent’s emotional well-being in later years, supporting previous research (i.e., Garrison et al., 1991; Kosky, Silburn, et al., 1990; Martin et al., 1995; Parker et al., 1995).

The model demonstrated that those adolescents who reported a parenting style comprised of high warmth and low control are more apt to have a strong sense of personal cohesion and future direction (i.e., Inhibition), feel more socially accepted by others (i.e., Introversion), and experience lower levels of anxiety, anger, depression, and suicidality than their age peers. The model also demonstrated that those adolescents who did not experience parental loss were more cooperative with others (i.e., Impulsivity), and reported lower levels of anger, depression, and suicidality, than their age peers.

It is important to note that the Care and Protection measures of the PBI are not objective measures of the warmth and control a child has received from his or her parent. Rather, the Care and Protection measures of the PBI are subjective measures of the parental warmth and control perceived by the child, raising a potential discrepancy between a report of the parent-child relationship and what actually took place within the
relationship. Nevertheless, as stated previously, Parker (1983) found that children's ratings of their parents significantly correlated at 0.50 with parents' self-rated treatment of their children. Moreover, siblings and twins were found to have a 0.70 correlation between their ratings for their parents (Parker, 1986; Robins, Helzer, & Coughlan, 1981). Further, Gotlib et al. (1988) compared the ratings of depressed and non-depressed women on the PBI and the BDI on two separate occasions and 2 years apart. They concluded that perceptions of caring and protection were stable over time, and did not shift with the remission of depressed mood. Thus, subjective reports of parenting style seem to display considerable validity.

As a measurement issue, it is noted that poor care consistently contributed more to both Poor Mothering and Poor Fathering than did high control. This result corroborates other research findings that the quality of parenting is determined somewhat more by care than by control (i.e., Adam et al., 1994; Martin & Waite, 1994; Parker et al., 1995; Tousignant et al., 1993).

The pathways in the extended model can also be construed as evidence for secure and insecure attachment patterns. A secure attachment is a reciprocal, enduring, emotional, and physical affiliation between a child and a caregiver, whereby the caregiver acts as protector, provider, and guide. Good parenting during infancy, exemplified by a warm, caring relationship with the caregiver, leads the child to develop an internal model of relationships with positive expectations for intimacy and care from others (Bowlby, 1988; Fonagy, 2001; Main, 1995; Sloman et al., 2003).

By contrast, an insecure attachment is likely to result from a cold and over-controlling parenting style. When a parent fails to respond appropriately to a child’s
needs, stress and even trauma may result. Repeated failures of response by the caregiver can severely affect the nature of attachment and psychological development of the child. In this instance, the child forms a working model of relationships characterised by mistrust, anger, anxiety, and lack of autonomy (Blatt & Maroudas, 1992; Fonagy, 2001; Main, 1995; Sloman et al., 2003). Insecure attachment can result from several parenting scenarios. Inexperienced or neglectful parents may simply not know how to parent and bond appropriately with their child. Other individuals may encounter various factors that impede good parenting, such as mental illness or their own childhood abuse. These factors can result in parents willingly or unwillingly choosing to emphasise control rather than warmth and protection in their parenting. Alternatively, family difficulties or traumatic events may occur which result in parents becoming unavailable to their children, either emotionally or physically.

The model indicates that adolescents who experienced a parenting style based on low warmth and high control, denoting an insecure attachment, formed lower levels of personal cohesion and sense of future direction (i.e., Inhibition), and experienced higher levels of social alienation (i.e., Introversion), anger, anxiety, depression, and suicidality, than did other adolescents. The model also indicates that adolescents who experienced childhood parental loss were less cooperative, and reported more anger, depression, and suicidality than did other adolescents. Results, then, support Bowlby's assertion that depression is intimately related to loss (1980). Bowlby contended that insecure attachment is the expression of a real or feared loss of the parent figure, and derives from early insecure attachments. Results also support other research findings that adolescents with insecure attachment exhibit higher levels of social alienation (i.e., Introversion),
impulsivity, depression, and suicidality (i.e., Adam, Sheldon-Keller, & West, 1996; Allen, Borman-Spurrell, & Hauser, 1996; Benjaminsen et al., 1990; Colson, 1972; Kashden et al., 1993; Kingsbury et al., 1999; Toth & Cicchetti, 1996).

Two main insecure attachment patterns have been identified, avoidant and ambivalent (Ainsworth et al., 1978; Rosenfeld, 1964). Children with an avoidant attachment pattern tend to withdraw from their caregiver, become inwardly less self-assured about themselves or their future, and have a sense of hopelessness and helplessness about their situation. Bowlby (1977) similarly noted an excessive self-reliance for this pattern. Children with an ambivalent attachment pattern also become inwardly less self-assured about themselves or their future, but are likely to exhibit anger towards their caregiver, apparently demanding attention, yet often rejecting any comfort offered. Bowlby (1977) likewise noted that ambivalent attachment results in an over-dependence on others in later life. Moreover, as previously discussed, it has been suggested that these two patterns of insecure attachment relate to the two types of depression, introjective and anaclitic.

Introjective depression has parallels to avoidant attachment. Controlling and overly-critical parenting causes the developing child to establish an exaggerated sense of independence and self-definition. Feeling inferior, and afraid of further criticism from others, these individuals become excessively self-critical and self-reliant. Anaclitic depression has parallels to ambivalent attachment. Depriving, rejecting, or overly-indulgent parenting causes the developing child to become over-dependent on interpersonal relationships, and is characterised by feelings of loneliness and helplessness. Fearing abandonment, these individuals may either become extremely
dependent on others, or rebel and become uncooperative (Blatt, D’Afflitti, and Quinlan, 1976; Blatt & Maroudas, 1992).

Relating the risk factors in this research to the characteristic features of insecure attachments, it was suggested in Phase 1 that pathways from parenting to Depression and Suicidality via Impulsivity and Anger exemplified both ambivalent attachment and anaclitic depression. It was further suggested that the pathway from Poor Parenting through Inhibition to Depression and Suicidality exemplified both avoidant attachment and introjective depression. However, findings of the current research suggest that there is neither a mutual exclusiveness between the insecure attachment patterns nor between the two types of depression. All three pathways support Bowlby’s premises that parenting influences children’s psychological well-being (1969), and that attachment patterns originate with parenting. Yet the model also suggests, from the strength of the three pathways, that they operate simultaneously, with multiple consequences flowing from poor parenting through different pathways.

The mutuality of pathways is supported by Arieti and Bemporad (1978, 1980), who contend that all depressive personalities share some common traits. Like Bowlby (1969, 1977), Arieti and Bemporad emphasise the role of early interpersonal relationships in personality development and vulnerability to depression, but they also emphasise the relationships between aspects of adult personality and types of depression. They maintain that the avoidant type with introjective depression, not achieving their goal, reacts with excessive independence and alienation from others (i.e., Introversion). By contrast, the ambivalent type with anaclitic depression, failing in relationship, reacts with self-blame, anger, and helplessness. However, Arieti and Bemporad contend that all
depressive personalities experience anxiety, fear of rejection or criticism from others, and most significantly, an overwhelming inhibition that prevents the development of alternate modes of attaining meaning from activity. The inhibition spoken about by Arieti and Bemporad (1980) is not exactly the same as the Inhibition factor used in this research. However, there is a striking similarity. A lack of sense of personal cohesion and future direction may reasonably reflect an inability to derive a sense of meaning in life.

Blatt and Maroudas (1992) affirmed that intermittent and inconsistent parenting contributes to later development of depression, but question whether the two different types of depression correspond to specific insecure attachment patterns. This research suggests that no such correspondence exists. The evidence of the developed model suggests that multiple consequences flow from insecure attachment. These consequences combine the excessive self-reliance typical of avoidant attachment with the overdependence typical of ambivalent attachment, resulting in low personal cohesion, anxiety, anger, depression, and suicidality. Especially for younger adolescents, as demonstrated in the Phase 1 model, poor parenting and childhood parental loss lead to Inhibition, Impulsivity, Introversion, Anxiety, Anger, Depression, and Suicidality.

As highlighted by Brennan (1993), the compulsive self-reliance exhibited by an individual with an avoidant pattern is not merely a search for self-definition, but is also a reaction against forming close relationships with others. The integrating feature for insecure attachment, then, is attitude toward close relationships. Insecurity about relationships in general may be manifest in a simultaneous rejection and dependence upon others. In fact, the more recently identified disorganised attachment pattern,
whereby a child combines both dependency on and rejection of the parent interchangeably (Main & Solomon, 1986), is reflected in the model especially well.

It must be appreciated that the current suggestions about parenting and attachment derive from the measure of parenting that was employed. The results of this research offer further support to Parker et al. (1979) and Burbach et al. (1989) in questioning the extent to which parental care and parental protection are independent dimensions of parental bonding as construed by the Parental Bonding Instrument (Parker et al., 1979). In the hypothesised models, for example, the two dimensions were not independent. Rather, in the developed models of best fit, a better separation was obtained between Care and Protection from mothers versus Care and Protection from fathers. Mothering and Fathering were shown to be the important factors rather than Care and Protection. It seems that adolescents, at least between 14 and 16 years of age, have a more global perception of parenting that combines care and protection for each parent.

10.3.2 Relevance to Millon’s theory of personality. Millon’s theory of personality (1969, 1981) casts parenting styles and infant bonding as influential factors for adolescent development and personality. The extended model developed in this research supported Millon’s attachment-based theory, demonstrating that parenting factors do influence aspects of adolescent personality. Poor Mothering and Poor Fathering acted as antecedents to the personality factor Inhibition, which in turn influenced the personality factor Introversion. As well, Childhood Parental Loss directly influenced the personality factor Impulsivity.

The extended model also supported previous research indicating that adolescent depression is correlated with elevations on the Inhibited Scale of the MAPI (Pantle et al.,
1990; Siemen et al., 1994). Indeed, the extended model demonstrated that the Inhibition Scale developed in this research, which was derived directly from the Inhibited Scale, correlated highly with the Inhibited Scale ($r = .75$) and was itself a direct predictor of adolescent depression. Because the Inhibition Scale is concise and highly focused in its item content, it offers a valuable research tool for further investigation of adolescent depression. Further, the 5-item Inhibition Scale devised in this research appears to have good psychometric properties. This congeneric scale had an internal consistency reliability of .77 at Phase 1, and test-retest reliabilities of .71 after one month and .50 after twelve months. These results compare favourably with test-retest reliabilities of .76 for a five-month period and .62 for a twelve-month period for the original MAPI Inhibited Scale.

The 5-item Introversion Scale in the current research was similarly derived from Millon’s Introversive Scale. However, the content was also mapped to content from both the NEO Extraversion Scale (Costa & McCrae, 1985) and the Extraversion Scale from the Eysenck Personality Questionnaire – Junior (Eysenck & Eysenck, 1970), in order to tap well-established measures of extraversion. Millon’s (Millon et al., 1982) scale identifies individuals who feel indifferent to having other people around, are mainly untroubled by intense emotional experiences, and are insensitive to interpersonal relationships. By contrast, the Introversion Scale in this research, similar to the NEO and EPQ, identified individuals who feel socially isolated. There was, therefore, only a small correlation between the Millon Introversive Scale and the Introversion Scale ($r = .26$).

Whereas Millon’s (Millon et al., 1982) Introversive Scale does not correlate significantly with suicidality, the Introversion factor in this research acted as an
antecedent to suicidality. Similarly, Colson (1972) and Beutrais et al. (1999), using the Eysenck Extraversion Scale, found a significant correlation between Introversion and Suicidality. It seems that the feeling of social isolation tapped by this research is an essential aspect of Introversion/Extraversion which influences subsequent anxiety, anger, depression, and suicidality.

The 3-item Impulsivity Scale in the current research was likewise derived from Millon’s Impulse Control Scale. The correlation between the two scales was .48. For Millon, adolescence is a time of growing maturity and autonomy when adolescents commonly feel the need and the right to speak out and behave in a manner consonant with their new belief system. The excesses in behaviour often exhibited by adolescents at this time demonstrate this new assertiveness, and are the focus of Millon’s scale. These excesses include anger, guilt, moodiness, impatience, and impulsivity (Millon et al., 1982).

The Impulsivity Scale in the current research focused on lack of cooperation versus doing what was expected by others, and was shown to be a precursor of adolescent suicidality via Anger and Depression. This finding supports research by Koslowsky et al. (1992), Kashden et al. (1993), and Beutrais et al. (1999), who also found a significant correlation between Impulsivity and Suicidality. Beutrais et al. used the Barratt Impulsivity Scale (1985), which measures impulsivity as a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard for negative consequences to self or others. Koslowsky et al. used a measure developed by Plutchik et al. (1986), which measures caution versus behaviour without forethought. It appears that both aspects of impulsivity, lack of cooperation and the tendency to act without
foresight, may be related, and influence an adolescent’s levels of suicidality.

10.4 Implications of the Current Research for Intervention

These findings have important implications for the prevention of suicide and the clinical management of youth at risk of suicide. First, depression and suicidal behaviour in adolescents must be seen and addressed within a broader social context. Although the models support findings that family functioning only indirectly influences an adolescent’s level of suicidality through depression (e.g., Garrison et al., 1991; Martin et al., 1995), the models also emphasise parenting factors as primary antecedents to suicidality. Further, the current research identifies Inhibition as the key factor impacted by quality of parenting, which in turn directly contributes to adolescent depression.

At an intervention level, then, it is important to address family issues. Poor parenting may index broader family dysfunction. The influence of mothering upon fathering also suggests that the quality of the parental relationship is as important as the individual parenting by either parent. Certainly, findings from other research indicate that marital conflict and family dysfunction are contributing factors in levels of adolescent depression and suicidality (e.g., Garrison et al., 1991; Goldney, 1981; Kienhorst et al., 1992; Kosky, Silburn, et al., 1990). Therefore, family-based assessments are needed that measure with greater accuracy the characteristics of family interactions. Treatments such as marriage counseling, family therapy, parenting classes, and social skills training for parents as well as adolescents are important components of effective treatment for youth at risk of suicide. Introducing parents to such internet sites as Reach Out! also offers them access to positive parenting information.
If, for whatever reasons, it is not possible to involve the parents in intervention, a second line of intervention is to assist adolescents with their personality development. Programs which focus on promoting a sense of personal achievement may improve an adolescent’s sense of personal cohesion and future direction (i.e., Inhibition). Programs which focus on social skills development or participating in a big brother/big sister program will enhance an adolescent’s ability to make friends, to feel more accepted and thus feel less socially isolated (i.e., Introversion). These latter programs, or outdoor-adventure programs which focus on interdependency, will also improve an adolescent’s skills in working alongside people and cooperation (i.e., Impulsivity).

A third line of intervention is to address adolescent mood. Relaxation and stress management programs can help adolescents reduce their levels of anxiety, and relaxation and anger management programs can assist them in managing their anger. Personal counseling, as well as all of the above, will address levels of depression. Introducing adolescents to such internet sites as Reach Out! is another valuable intervention in reducing risk factors for suicidality for both personality and mood, as previously discussed.

A second consideration for intervention is that prevention is better than cure. The earlier and more widely prevention strategies can be offered, the better is their chance of success. Kienhorst et al. (1992) recommended that cognitive-behavioural programs and social skills training be offered to all students, preferably in early adolescence. This research indicates that adolescent programs should target the development of students’ sense of personal cohesion and cooperation, together with adaptive coping strategies for negative emotions such as anxiety, anger, and depression. Interventions for parents need
to include fathers as well as mothers, and focus on the best ways to express care and implement control for their adolescent children.

The *Reach Out!* Internet site appears to offer some effective intervention with adolescent depression and suicidality for students most at-risk. A third implication of this research, then, is that schools and parents be made aware of this tool, be introduced to this and other similar internet sites (i.e., *Bluepages* and *MoodGYM*), and be encouraged to make use of them. The internet is both inexpensive and accessible. Indeed, almost all secondary and even primary schools provide computers for student use. Public libraries and Internet Cafes also make internet access available to the public.

A fourth implication is age differences. Age appears to influence the relationships between certain risk factors and depression. Thus, different strategies should be considered when working with younger versus older students to prevent depression and suicidality. Three of the pathways that reduced with age involved parenting factors: Poor Fathering to Impulsivity, Poor Fathering to Suicidality, and Childhood Parental Loss to Poor Mothering. Further, the pathway from Poor Mothering to Inhibition increased in significance. As students grow older and mature, it seems that fathers have less influence and mothers have a greater influence on adolescents. For younger students, then, it is as important, if not more important, to focus on the father-child relationship as the mother-child relationship. By Year-10, however, it may be more important to focus on the mother-child relationship.

A fourth pathway which reduced with age was Gender to Inhibition. It was concluded that the main cause of higher Inhibition in females was puberty, and that as females become older, they cease to experience higher levels of Inhibition than do males.
It may be more important, then, for younger females especially, that suicide prevention strategies include information about puberty and suggestions for coping with the side effects of puberty, such as mood swings.

Further, current research is finding that prevention may be more effective if offered as early as late primary school (Gillham et al., 1995; Roberts, 1999). During late childhood and early adolescence, cognitive processes are at the level of formal operations, children have a better understanding of their own thinking processes, and their self-schemas and peer relationships are more stable. Also, this is a time before most children have developed full-blown depressive disorders. Therefore, interventions may be more successful if directed at a younger age group.

10.5 Strengths and Limitations of the Research

This research has some notable strengths in extending knowledge about risk factors of adolescent suicidal behaviour. Nevertheless, findings must also be considered within the context of certain limitations. A strength of this research was that the samples comprised non-clinical adolescents from regional and rural Victoria. The findings thus permit generalisation of risk factors to populations who have previously received little research investigation for adolescent suicidal behaviour.

A second major strength of this research was the development of the three congeneric personality measures. These three short-form scales have good psychometric properties, are concise, and are, therefore, easy to administer. The Inhibition Scale, with an internal consistency reliability of .77 at Phase 1, and a test-retest reliability of .50 after twelve months, was shown to be particularly relevant in identifying adolescents at-risk of
depression. The Introversion and the Impulsivity Scales had internal consistency reliabilities of .78 and .65 at Phase 1, and test-retest reliabilities of .65 and .66 after twelve months, respectively. These results compare favourably with a median internal consistency reliability coefficient for all MAPI scales of .74, and test-retest reliabilities in the mid-sixties after 12-months.

A third strength of this research was its rigorous statistical method. As previously mentioned, between 1995 and 1999, the Australian government supported substantial research into suicide prevention, including the creation of the Reach Out! internet site. Although most programs offered anecdotal information that supported their value, only a few projects demonstrated statistically significant reductions in suicidality due to few projects using a control group or proper statistical evaluation (Mitchell, 2000). By contrast, the current research has included both a control group and good statistical evaluation.

A fourth strength of this study was the use of structural equation modeling that allowed the complex relationships between risk factors to be determined. For example, the current research confirmed an indirect model of risk factors, showing that the selected factors influence adolescent suicidality via antecedents that impact upon Depression. Structural equation modeling also enables researchers to compare alternative models of cause-effect relationships (Farrell, 1994). Thus, the current research established that Poor Mothering influences Poor Fathering rather than the reverse, and that Anxiety influences Anger rather than the reverse. Further, structural equation modeling enabled constructs to simultaneously receive influence from and exert
influence over other constructs. For example, Inhibition was generated by poor parenting, and contributed to Depression.

Despite its strengths, structural equation modeling does not always clearly establish whether a particular variable is a cause or effect of another variable. Although the technique can determine whether a model is consistent with the data, there are always other equivalent models that may fit the data equally well (Anderson & Gerbing, 1988). For this reason, theory and previous research were carefully observed in building and amending models for this study. Further, this research replicated the model with the same sample across time, and cross-validated with another sample aged one year older. The latter aspect, however, may have limitations due to the age difference.

One limitation to the research was that sample sizes were small (under 200 each), particularly in Phase 3 but also in Phase 2, suggesting a greater risk of a type 1 error than a type 2 error (Keppel, 1991). It is possible, then, that some significant outcomes were not identified. For example, the decrease in Depression for the experimental high-risk subgroup was near-significance at Phase 2, suggesting an intervention effect. Moreover, all of the risk factors improved from Phase 1 to Phase 3 for this subgroup, but only Inhibition and Depression improved significantly. It may be that with a larger sample, intervention effects could be established for more of the risk factors.

As with any research, a limited number of variables were explored. Other important risk factors for adolescent depression and suicidality such as family dysfunction were omitted, but may have helped clarify the influence of certain constructs in the models. Also, because the length of the study was only one year, age differences could not be thoroughly explored. Age effects were found for Anxiety and Inhibition,
and it may be that over a longer period (e.g., three to five years), age would affect other risk factors as well.

A further limitation of the study was the brief time students spent on the Reach Out! site. Although some intervention effects were demonstrated, had students spent more time on the site, further intervention effects may have been identified.

A final limitation, previously mentioned, was a methodological flaw. Childhood Parental Loss was assessed only at Phase 1 for the Experimental Group. With updated assessment of Loss at the later phases, pathways involving Loss would have been more accurately ascertained.

10.6 Future Research Directions

The models established by this research could next be broadened to include further risk factors implicated in other research, such as family dysfunction, parental mental illness, undesirable life events other than childhood parental loss, and peer relationships (e.g., Beutrais, 1999; Martin et al. 1995). In particular, the inclusion of factors such as family dysfunction and parental mental illness may further elucidate the antecedents to poor parenting.

Inhibition as a risk factor for adolescent suicidality was found to be crucial to the overall models, positioned at their very heart. Further, with its focus on a sense of personal cohesion and future direction, Inhibition flags a crucial goal for intervention strategies. The importance and relevance of this factor merits closer scrutiny in future research, particularly to determine other possible antecedents.
Another important advance would be to further test this model with different ages of adolescents, perhaps between 10 – 16 years, to explore how the model fits for younger and older individuals. Findings could help inform the tailoring of interventions to the age of adolescents. For example, current findings suggest that Poor Fathering influences Impulsivity and Suicidality for younger adolescents alone, and that other factors would need consideration if aiming to improve Impulsivity and Suicidality in older adolescents.

A methodological issue for future research is that approximately 30% of the students who affirmed a detailed plan or general plan to end their life had actually misunderstood the question. When followed up, they interpreted the items as having a career plan for the rest of their life. Future research needs to rephrase this particular question, asking more clearly and directly if students have a plan for attempting suicide or for taking their life.

Cubis et al (1989) suggested that adolescents’ perceptions at this age may be state dependent, reflecting day-to-day parental behaviour rather than any sense of pervasive antagonism or excessive control. However, if this were true, correlations between Care and Protection would be low. In fact, in this research, correlations between the four measures (i.e., Mother Care, Father Care, Mother Protection, and Father Protection) were consistently substantial. Future research should further investigate the relationships between these four measures, especially in relationship to adolescent depression and suicidality.
10.7 Concluding Comment

The issue of adolescent suicide is a personal, cultural, and global concern. Many factors are influencing our young people and their parents today. As Richard Eckersley (1993) wrote: “I believe that behind suicide and other youth problems also lies a profound and growing failure of the culture of western industrial societies - a failure to provide a sense of meaning, belonging and purpose in our lives” (p. 1). This research implicates parents as a central source for this sense of meaning. The developed models illustrate how vital it is that parents provide their children with a warm and caring relationship that develops a positive sense of personal cohesion and future direction. In turn, society must provide parents, as much as is possible, with the supports to achieve this type of secure relationship with their children. The model further illustrates the need to offer prevention and intervention strategies to both adolescents and their parents in order to maintain healthy family relationships.

In response to a 1990 survey about the future of Australia in the new millennium by 120 eleven-year-olds living in Sydney (Eckersley, 1993), the Sydney Morning Herald wrote: “Nothing prepared us for the depth of the children’s fear of the future, their despair about the state of our planet and their bleak predictions for their own nation, Australia.” The established models add another central dimension to these comments, demonstrating three fundamental fears for depressed and suicidal adolescents in lacking a sense of personal direction, in experiencing a sense of isolation from their peers, and by having a sense of hopelessness and helplessness to change their life situation for the better.
Adolescent depression and suicide remain significant issues of our day. This research emphasised the importance of good parenting which includes warmth, appropriate boundaries (i.e., control), and secure attachments. This research also offered directions for the channelling of expertise and resources, supporting parents and families in the early years of a child’s life, and through the challenging adolescent years.
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APPENDIX A1
DEAKIN UNIVERSITY ETHICS APPROVAL

Research Services
Office of the Pro Vice-Chancellor (Research) (Burwood Campus)

MEMORANDUM

TO: Ms Kathryn Thomas
    Psychology
    Geelong

FROM: Secretary, Deakin University Ethics Committee (DUEC)

DATE: 19 November 1998

SUBJECT: PROJECT: EC 179-98 (Please quote this project number in future communication.)

VULNERABILITY AND RESILIENCY FACTORS IN ADOLESCENT DEPRESSION AND SUICIDAL IDEATION

The above human research project was considered at DUEC Meeting 6/98 held on 16 November 1998 and the decision of the Committee is outlined below.

THAT APPROVAL BE GIVEN FOR MS KATHRYN THOMAS, UNDER THE SUPERVISION OF DR ROBYN MILLER, PSYCHOLOGY, TO UNDERTAKE THIS PROJECT FROM 1 MARCH 1999 TO 31 MARCH 2000.

Standard on-going ethical clearance has been given for the above project, the conditions of which are listed on the accompanying page. As part of the standard conditions, the complaints clause as given must be added to the plain language statement, say as an over-lined end note.

Please contact me if you have any queries about on-going ethical clearance. I can be contacted on (03) 9251 7123 (x17123). The project number should be quoted in any communication.

Signature Redacted by Library

Keith Wilkins
Secretary, DUEC
Email: keithwil@deakin.edu.au
APPENDIX A2
DEAKIN UNIVERSITY ETHICS APPROVAL WITH MODIFICATIONS

Research Services
Office of the Pro Vice-Chancellor (Research) (Burwood Campus)

MEMORANDUM

TO: Ms Kathryn Thomas  
    Psychology  
    Geelong  

cc: Dr Robyn Miller

FROM: Secretary, Deakin University Ethics Committee (DUEC)

DATE: 19 April 1999

SUBJECT: PROJECT: EC 179-98  
(Please quote this project number in future communication.)
VULNERABILITY AND RESILIENCY FACTORS IN ADOLESCENT DEPRESSION 
AND SUICIDAL IDEATION

The above human research project was considered at DUEC Meeting 2/99 held on 12 April 1999 
following a request to modify the project. The decision of the Committee reads as follows.

THAT APPROVAL BE GIVEN FOR MS KATHRYN THOMAS, UNDER THE SUPERVISION 
OF DR ROBYN MILLER, PSYCHOLOGY, TO CONTINUE THIS PROJECT, AS AMENDED, 
TO 31 MARCH 2000.

Your request to modify/extend the above project, to include an additional 100 Year 10 students, has been 
approved. Standard on-going ethical clearance is now given to 31 March 2000. The conditions are listed in 
the page enclosed herewith.

Please do not hesitate to contact me should you require any further clarification or information with respect 
to on-going approval. I can be contacted on (03) 9251 7123 (x17123). The project number should be 
quoted in any communication.

Keith Wilkins  
Secretary, DUEC  
Email: keith@deakin.edu.au
APPENDIX B1

EDUCATION VICTORIA ETHICS APPROVAL
SOS 000765

8 December 1998

Ms Kathy Thomas
22 Amundsen Street
BELMONT 3216

Dear Ms Thomas,

Thank you for your letter of 9 November 1998, in which you request permission to conduct a research study in government schools entitled *Vulnerability and Resiliency Factors in Adolescent Depression and Suicidal Ideation*.

I am pleased to advise that your research proposal is approved in principle subject to the conditions detailed below.

1. You obtain approval for the research to be conducted in each school directly from the principal. Details of your research, copies of this letter of approval and the letter of approval from the relevant ethics committee are to be provided to the principal. However, should your institution’s ethics committee require significant changes, these changes must be submitted to the Department of Education for its consideration before you proceed. The final decision as to whether or not your research can proceed in a school rests with the principal.

2. No student is to participate in this research study unless they are willing to do so and parental permission is received. Sufficient information must be provided to enable parents to make an informed decision.
3. As a matter of courtesy, a list of the schools which you intend to approach for your research should be provided to the General Manager (Schools) of the region(s) in which these schools are located. An outline of your research and a copy of this letter of approval should also be enclosed.

4. Any extensions to the research proposal, additional research involving use of the data collected, or publication of the data beyond that normally associated with academic studies will require a further research approval submission.

5. At the conclusion of your study, a copy or summary of the research findings should be forwarded to me at the above address.

I wish you well with your research study. Should you have further enquiries on this matter, please contact Dr Kevin Kee, School Community Support Branch, on 9628 4808.

Yours sincerely,

AVIS GRAHAME
Acting Assistant General Manager
School Community Support Branch

encl.
APPENDIX B2

EDUCATION VICTORIA ETHICS APPROVAL WITH MODIFICATIONS
SOS 000765

17 March 1999

Ms Kathryn Thomas
22 Amundsen Street
BELMONT 3216

Dear Ms Thomas,

Thank you for your letter of 1 March 1999, advising the Department of your changed samples in relation to your research titled *Vulnerability and Resiliency Factors in Adolescent Depression and Suicidal Ideation*.

Approval in principle is granted for the change. When contacting principal you should show them a copy of our previous letter of approval.

Yours sincerely,

[Signature Redacted by Library]

**DR KEVIN KEE**
Executive Officer
School Research
APPENDIX C

PLAIN LANGUAGE STATEMENTS
FOR PARENTS AND STUDENTS
DEAKIN UNIVERSITY
ETHICS COMMITTEE
PLAIN LANGUAGE STATEMENT FOR PARENTS

(NB: All Plain Language Statements must include the relevant Deakin University contact names, numbers and address)

My name is Kathy Thomas and I am completing a Masters Degree in Psychology at Deakin University under the supervision of Dr. Robyn Miller. My research explores the feelings that adolescents experience and the factors that might influence these feelings. This research is important because it will further our understanding of the challenges faced by our adolescent children and possibly offer a way to help them cope with the difficulties they face. I am inviting you to give consent for your son or daughter in year ten to participate in this research, which will be conducted at school.

If your son or daughter participates, he or she will complete a questionnaire involving personality characteristics, mood, and perceptions of parents. Examples of some questions are "I have been feeling lonely," "I like the way I look," "My parents let me decide things for myself," and "I sometimes believe life is not worth living." A choice of contact numbers will be given to all students in case anyone wishes to discuss any issue raised by the questionnaire. Also, follow-up counselling as appropriate will be implemented for any student who reports a strong sense of self-harm.

After the questionnaire, your daughter or son will be introduced to a new site on the internet. Reach Out! provides young people with the opportunity to communicate anonymously and get help in the difficult times we all experience growing up. Reach Out! is also a valuable resource to concerned families and friends.

The information I receive will remain totally confidential. Names and response sheets will be numerically coded and kept in separate and secure places. At no time will any person have access to both name and answer sheets.

If you are happy for your son or daughter to participate in this important research, please sign the enclosed consent form and return it to the school (specific place to be designated) by (specific date to be designated). If you would like to view the entire questionnaire before making a decision, please contact me.

If you are interested in the results of this research, please tick the appropriate box at the end of the consent form and I will be pleased to send you a summary of the results after about 3 months time and 15 months time.

If you have any questions, please feel free to contact me (Kathy) on the number listed below. Should you have any concerns about the conduct of this research project, please contact the Secretary, Deakin University Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, Burwood, Vic. 3125. Tel. (03) 9251 7123.

Your participation in this important research is greatly appreciated.

Thank you.

Kathy Thomas, School of Psychology, Deakin University, GEELONG 3217 Ph: 5227 2926

Dr. Robyn Miller, School of Psychology, Deakin University, GEELONG 3217 Ph: 5227 2928
Senior Lecturer
My name is Kathy Thomas and I am completing a Masters Degree in Psychology at Deakin University. My research explores the feelings that adolescents experience and factors that might influence these feelings. I am inviting you to participate in this important research which is being conducted under the supervision of Dr. Robyn Miller.

If you participate, you will complete a questionnaire on personality characteristics, mood, and perceptions of parents. The questions on mood will include some on negative mood. Examples of some questions are "I have been feeling lonely," "I like the way I look," "My parents let me decide things for myself," and "I sometimes believe life is not worth living." The questionnaire will take no more than 60 minutes to complete. A choice of contact numbers will be given to all students in case anyone wishes to discuss any concerns raised by the questionnaire.

For the following 30 minutes, you will be introduced to a new site on the internet. Reach Out! provides young people with the opportunity to communicate anonymously and get help in the difficult times we all experience growing up. In one month, and again in twelve months, I will return and give you a short part of the questionnaire again. It will take you no more than 30 minutes to complete this smaller questionnaire.

The information that you give me will remain totally confidential, with one exception. If you report having a strong sense of self-harm, then I will ask to speak with you privately about how you are feeling and organise counselling for you if appropriate. At all other times, names and response sheets will be numerically coded and kept in separate and secure places. At no time will any person have access to both name and answer sheets.

Please feel free to withdraw your participation now or at any time while completing the questionnaire. If at any time you have concerns or questions about the questionnaire, please contact me or one of the people on the list that you will be given.

If you are interested and tick the appropriate box at the beginning of the questionnaire, I will be pleased to send you a summary of the results after about 3 months time and 15 months time. Should you have any concerns about the conduct of this research project, please contact the Secretary, Deakin University Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, Burwood, Vic. 3125. Tel. (03) 9251 7123.

Your participation in this important research is greatly appreciated.

Thank you.

Kathy Thomas, School of Psychology, Deakin University, GEELONG 3217 Ph: 5227 2926
Dr. Robyn Miller, Senior Lecturer School of Psychology, Deakin University, GEELONG 3217 Ph: 5227 2928
APPENDIX D

INTERVIEW SCHEDULE – PHASE 1

INTERVIEW SCHEDULE

The answers you give to the following questions will be totally confidential. As soon as these papers are collected, the front page with your name and address will be removed and your answers will be identified by numbers only. Your names are being kept in order that your answers today may be compared with your answers in 12 months time. This is being done for research purposes only, and the list of names and the answer sheets will be locked away in different places. No one will know what answers you have given except yourself.

One exception to keeping your answers confidential is that if your score for suicide is unusually high, you will be contacted and support will be offered. On the other hand, when this session ends, you will receive a list of names and agencies that you can contact to discuss any issues that may have been raised for you.

Please answer all questions honestly as this research may help you and others in the future. Thank you for your cooperation.

1. Name: ____________________________________________

2. Address: __________________________________________
             __________________________________________

3. Phone number: ________________________________

Identification Number: ___________________________
(not to be filled in)
**Directions:** Below is a list of words that describe feelings people have. Please read each one carefully. Then circle the number which best describes HOW YOU HAVE BEEN FEELING DURING THE PAST FORTNIGHT INCLUDING TODAY. The numbers refer to the following descriptive phrases:

0 = Not at all  
1 = A little  
2 = Moderately  
3 = Quite a bit  
4 = Extremely

<table>
<thead>
<tr>
<th>Not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

1. alert  23. uneasy  0  1  2  3  4
2. tense  24. ready to fight 0  1  2  3  4
3. angry  25. guilty 0  1  2  3  4
4. discouraged  26. full of pep 0  1  2  3  4
5. unworthy  27. rebellious 0  1  2  3  4
6. peeved  28. deceived 0  1  2  3  4
7. shaky  29. desperate 0  1  2  3  4
8. on edge  30. nervous 0  1  2  3  4
9. gloomy  31. worthless 0  1  2  3  4
10. active  32. carefree 0  1  2  3  4
11. grouchy  33. anxious 0  1  2  3  4
12. spiteful  34. lonely 0  1  2  3  4
13. terrified  35. furious 0  1  2  3  4
14. vigorous  36. helpless 0  1  2  3  4
15. panicky  37. lively 0  1  2  3  4
16. blue  38. cheerful 0  1  2  3  4
17. relaxed  39. unhappy 0  1  2  3  4
18. annoyed  40. bad-tempered 0  1  2  3  4
19. energetic  41. sorry 0  1  2  3  4
20. resentful  42. sad 0  1  2  3  4
21. bitter  43. hopeless 0  1  2  3  4
22. miserable  44. restless 0  1  2  3  4

2
Directions: The following statements are statements that one might use to describe oneself. Read each statement and decide whether or not it describes you. If you agree that it does describe you, tick YES. If it does not describe you, tick NO.

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel good showing my body in a bathing suit.</td>
<td></td>
</tr>
<tr>
<td>2. I almost always think before I act.</td>
<td></td>
</tr>
<tr>
<td>3. My parents have made a very good home for their family.</td>
<td></td>
</tr>
<tr>
<td>4. I stay cool even when I'm really angry with someone.</td>
<td></td>
</tr>
<tr>
<td>5. I have a strong need to feel like an important person.</td>
<td></td>
</tr>
<tr>
<td>6. I get a lot of satisfaction in my school work.</td>
<td></td>
</tr>
<tr>
<td>7. I enjoy thinking about sex.</td>
<td></td>
</tr>
<tr>
<td>8. I sort of feel sad when I see someone who's lonely.</td>
<td></td>
</tr>
<tr>
<td>9. I'm sure of my feelings about most things.</td>
<td></td>
</tr>
<tr>
<td>10. I always try to do what is proper.</td>
<td></td>
</tr>
<tr>
<td>11. I am a quiet and cooperative person.</td>
<td></td>
</tr>
<tr>
<td>12. I'm pretty sure I know who I am and what I want in life.</td>
<td></td>
</tr>
<tr>
<td>13. I feel guilty when I have to lie to a friend.</td>
<td></td>
</tr>
<tr>
<td>14. I get so touchy that I can't talk about certain things.</td>
<td></td>
</tr>
<tr>
<td>15. I often think about ending my life.</td>
<td></td>
</tr>
<tr>
<td>16. I try hard to do well at everything I do.</td>
<td></td>
</tr>
<tr>
<td>17. I become very excited or upset once a week or more.</td>
<td></td>
</tr>
<tr>
<td>18. When I get angry, I usually cool down and let my feelings pass.</td>
<td></td>
</tr>
<tr>
<td>19. I'm quite sure that I am sexually attractive.</td>
<td></td>
</tr>
<tr>
<td>20. I get along quite well with the other children at home.</td>
<td></td>
</tr>
<tr>
<td>21. I like to follow instructions and do what others expect of me.</td>
<td></td>
</tr>
<tr>
<td>22. I have more friends than I can keep up with.</td>
<td></td>
</tr>
<tr>
<td>23. I am very uneasy when I'm supposed to tell people what to do.</td>
<td></td>
</tr>
<tr>
<td>24. I like the way I look.</td>
<td></td>
</tr>
<tr>
<td>25. I do my very best not to hurt people's feelings.</td>
<td></td>
</tr>
<tr>
<td>26. I look forward to growing up and making something of myself.</td>
<td></td>
</tr>
<tr>
<td>27. I am more worried about finishing things that I start than most people.</td>
<td></td>
</tr>
<tr>
<td>28. I can depend on my parents to be understanding of me.</td>
<td></td>
</tr>
<tr>
<td>29. I would never use illegal drugs, no matter what.</td>
<td></td>
</tr>
<tr>
<td>30. Sex is enjoyable.</td>
<td></td>
</tr>
<tr>
<td>31. Rather than demand things, people can get what they want by being gentle and thoughtful.</td>
<td></td>
</tr>
<tr>
<td>32. It is very important that children learn to obey their elders.</td>
<td></td>
</tr>
<tr>
<td>33. I have a pretty clear idea of what I want to do.</td>
<td></td>
</tr>
<tr>
<td>34. It is easy for me to take advantage of people.</td>
<td></td>
</tr>
<tr>
<td>35. I'd like to trade bodies with someone else.</td>
<td></td>
</tr>
<tr>
<td>36. I like to arrange things down to the last detail.</td>
<td></td>
</tr>
<tr>
<td>37. In this world, you either push or get shoved.</td>
<td></td>
</tr>
<tr>
<td>38. My social life is very satisfying to me.</td>
<td></td>
</tr>
<tr>
<td>39. I don't think I have as much interest in sex as others my age.</td>
<td></td>
</tr>
<tr>
<td>40. When someone hurts me, I try to forget it.</td>
<td></td>
</tr>
<tr>
<td>41. I have deliberately injured or harmed myself.</td>
<td></td>
</tr>
<tr>
<td>42. I enjoy getting one of the highest grades on a test.</td>
<td></td>
</tr>
<tr>
<td>43. My parents are very kind to me.</td>
<td></td>
</tr>
<tr>
<td>44. I have a strong desire to win any game I play with others.</td>
<td></td>
</tr>
<tr>
<td>45. I think I have a good build.</td>
<td></td>
</tr>
<tr>
<td>46. I have almost no close ties with others my age.</td>
<td></td>
</tr>
<tr>
<td>47. I have faith that human nature is good.</td>
<td></td>
</tr>
<tr>
<td>48. If I see a person I know from a distance, I usually try to avoid them.</td>
<td></td>
</tr>
<tr>
<td>49. When I don't get my way, I usually lose my temper.</td>
<td></td>
</tr>
<tr>
<td>50. I have a better idea of the kind of person I am than other adolescents do.</td>
<td></td>
</tr>
<tr>
<td>51. My friends seem to turn to me more than to others when they have problems.</td>
<td></td>
</tr>
<tr>
<td>52. What this country really needs are more serious and devoted citizens.</td>
<td></td>
</tr>
<tr>
<td>53. I make friends easily.</td>
<td></td>
</tr>
<tr>
<td>54. I don't like looking at myself in the mirror.</td>
<td></td>
</tr>
<tr>
<td>55. I usually let other people have their own way.</td>
<td></td>
</tr>
<tr>
<td>56. I'm always busy in lots of social activities.</td>
<td></td>
</tr>
<tr>
<td>57. I don't seem to know what I want out of life.</td>
<td></td>
</tr>
<tr>
<td>58. I have worked out a general way to end my life.</td>
<td></td>
</tr>
<tr>
<td>59. Other people my age seem more sure than I am of who they are and what they want.</td>
<td></td>
</tr>
<tr>
<td>60. When I was a young child, my parents felt very proud of me.</td>
<td></td>
</tr>
<tr>
<td>61. I have told at least one other person that I am going to take my life.</td>
<td></td>
</tr>
<tr>
<td>62. I own my own house.</td>
<td></td>
</tr>
<tr>
<td>63. I often doubt whether people are really interested in what I am saying to them.</td>
<td></td>
</tr>
<tr>
<td>64. Someone else will probably have to support me when I'm an adult.</td>
<td></td>
</tr>
<tr>
<td>65. I find it hard to feel sorry for people who are always worried about things.</td>
<td></td>
</tr>
<tr>
<td>66. I seem to have a problem getting along with other adolescents.</td>
<td></td>
</tr>
<tr>
<td>67. Thinking about sex confuses me much of the time.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td>---</td>
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</tr>
<tr>
<td>68.</td>
<td>I would much rather follow someone than be the leader.</td>
</tr>
<tr>
<td>69.</td>
<td>To get ahead in this world I'm willing to push people who get in my way.</td>
</tr>
<tr>
<td>70.</td>
<td>I am pleased with the way my body has developed.</td>
</tr>
<tr>
<td>71.</td>
<td>I can see more sides of a problem better than others can.</td>
</tr>
<tr>
<td>72.</td>
<td>I would rather be almost anywhere but home.</td>
</tr>
<tr>
<td>73.</td>
<td>Becoming involved in other people's problems is a waste of time.</td>
</tr>
<tr>
<td>74.</td>
<td>I guess I'm a complainer who expects the worst to happen.</td>
</tr>
<tr>
<td>75.</td>
<td>I often do things for no reason other than it might be fun.</td>
</tr>
<tr>
<td>76.</td>
<td>It is not unusual to feel lonely and unwanted.</td>
</tr>
<tr>
<td>77.</td>
<td>I feel pretty aimless and don't know where I'm going.</td>
</tr>
<tr>
<td>78.</td>
<td>I do my best to stop anyone from trying to boss me.</td>
</tr>
<tr>
<td>79.</td>
<td>If I see someone yawn, I often start to yawn, too.</td>
</tr>
<tr>
<td>80.</td>
<td>My parents often tell me I'm no good.</td>
</tr>
<tr>
<td>81.</td>
<td>I am a dramatic and showy sort of person.</td>
</tr>
<tr>
<td>82.</td>
<td>Sometimes feel I am in this world all alone.</td>
</tr>
<tr>
<td>83.</td>
<td>I really have to have my work pile up.</td>
</tr>
<tr>
<td>84.</td>
<td>I would rather be direct with people than avoid telling them something they don't like.</td>
</tr>
<tr>
<td>85.</td>
<td>I'm pretty immature about sexual matters.</td>
</tr>
<tr>
<td>86.</td>
<td>I'd rather just lie around doing nothing than work or go to school.</td>
</tr>
<tr>
<td>87.</td>
<td>Lots of kids seem to have it in for me.</td>
</tr>
<tr>
<td>88.</td>
<td>Among the most important things a person can have are a strong will and the drive to get ahead.</td>
</tr>
<tr>
<td>89.</td>
<td>I watch at least ten hours of television everyday.</td>
</tr>
<tr>
<td>90.</td>
<td>I often get so stoned (either from alcohol or drugs) that I don't know what I'm doing.</td>
</tr>
<tr>
<td>91.</td>
<td>Punishment never stopped me from doing whatever I wanted.</td>
</tr>
<tr>
<td>92.</td>
<td>I very often think I am not wanted by others in a group.</td>
</tr>
<tr>
<td>93.</td>
<td>Others my age seem to have things together better than I do.</td>
</tr>
<tr>
<td>94.</td>
<td>People can influence me quite easily.</td>
</tr>
<tr>
<td>95.</td>
<td>I often feel so angry that I want to throw and break things.</td>
</tr>
<tr>
<td>96.</td>
<td>I find it hard to understand why people cry at a sad film.</td>
</tr>
<tr>
<td>97.</td>
<td>I often say things that I regret having said.</td>
</tr>
<tr>
<td>98.</td>
<td>I guess I depend too much on others to be helpful to me.</td>
</tr>
<tr>
<td>99.</td>
<td>I'm not answering these questions honestly</td>
</tr>
<tr>
<td>100.</td>
<td>I have a pretty hot temper.</td>
</tr>
<tr>
<td>101.</td>
<td>I feel left out of things socially.</td>
</tr>
<tr>
<td>102.</td>
<td>I like to be the one in authority to take charge of things.</td>
</tr>
<tr>
<td>103.</td>
<td>I have tried to kill myself.</td>
</tr>
<tr>
<td>104.</td>
<td>I've just about given up as far as school is concerned.</td>
</tr>
<tr>
<td>105.</td>
<td>I like it at home.</td>
</tr>
<tr>
<td>106.</td>
<td>I don't mind that other adolescents are not interested in my friendship.</td>
</tr>
<tr>
<td>107.</td>
<td>I think adolescents are expected to know too much about sex.</td>
</tr>
<tr>
<td>108.</td>
<td>I am very pleased with all the things I have done up to now.</td>
</tr>
<tr>
<td>109.</td>
<td>Others my age never seem to call me to get together with them.</td>
</tr>
<tr>
<td>110.</td>
<td>I like to tell others about the things I have done well.</td>
</tr>
<tr>
<td>111.</td>
<td>I am glad that feelings about sex have become a part of my life now.</td>
</tr>
<tr>
<td>112.</td>
<td>I get very frightened when I think of being alone in the world.</td>
</tr>
<tr>
<td>113.</td>
<td>If you asked me to describe myself I wouldn't know what to say.</td>
</tr>
<tr>
<td>114.</td>
<td>I don't depend much on other people for friendship.</td>
</tr>
<tr>
<td>115.</td>
<td>I doubt if I'll make much of myself in life.</td>
</tr>
<tr>
<td>116.</td>
<td>If I read these questions a month from now, I'm sure I would change most of my answers.</td>
</tr>
<tr>
<td>117.</td>
<td>To see someone suffering doesn't bother me.</td>
</tr>
<tr>
<td>118.</td>
<td>I'm jealous of the special attention the other children in the family get.</td>
</tr>
<tr>
<td>119.</td>
<td>Most people are better looking than I am.</td>
</tr>
<tr>
<td>120.</td>
<td>All my life I have to &quot;blow up&quot; now and then.</td>
</tr>
<tr>
<td>121.</td>
<td>A quiet hobby is more fun for me than a party.</td>
</tr>
<tr>
<td>122.</td>
<td>I sometimes believe life is not worth living.</td>
</tr>
<tr>
<td>123.</td>
<td>I get upset when I see a very sick person.</td>
</tr>
<tr>
<td>124.</td>
<td>I get upset when things I don't expect happen to me.</td>
</tr>
<tr>
<td>125.</td>
<td>I worry about my looks.</td>
</tr>
<tr>
<td>126.</td>
<td>I'm among the more popular kids at school.</td>
</tr>
<tr>
<td>127.</td>
<td>There are always a number of reasons why most problems can't be solved.</td>
</tr>
<tr>
<td>128.</td>
<td>I have a detailed plan for how to end my life.</td>
</tr>
<tr>
<td>129.</td>
<td>I do my best to get along with others by being pleasant and agreeable.</td>
</tr>
<tr>
<td>130.</td>
<td>Sex is disgusting.</td>
</tr>
<tr>
<td>131.</td>
<td>I have eaten both raw vegetables and cooked vegetables in my life.</td>
</tr>
<tr>
<td>132.</td>
<td>It is good to have a regular way of doing things so as to avoid mistakes.</td>
</tr>
<tr>
<td>133.</td>
<td>My family is always yelling and fighting.</td>
</tr>
<tr>
<td>134.</td>
<td>I would like to continue in school and in</td>
</tr>
<tr>
<td>135.</td>
<td>I seem to fit in right away with any group of new kids I meet.</td>
</tr>
<tr>
<td>------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>136.</td>
<td>There's nothing I like more than getting in a car and zooming off.</td>
</tr>
<tr>
<td>137.</td>
<td>I've done most things in my life very well.</td>
</tr>
<tr>
<td>138.</td>
<td>Lonely kids usually deserve to be lonely.</td>
</tr>
<tr>
<td>139.</td>
<td>If I want to do something, I just do it without thinking of what might happen.</td>
</tr>
<tr>
<td>140.</td>
<td>So little of what I have done has been appreciated by others.</td>
</tr>
<tr>
<td>141.</td>
<td>I haven't been paying too much attention to the questions on these pages.</td>
</tr>
<tr>
<td>142.</td>
<td>I make hasty remarks to people if they deserve it.</td>
</tr>
<tr>
<td>143.</td>
<td>I often feel as if I'm floating around, sort of lost in life.</td>
</tr>
<tr>
<td>144.</td>
<td>I'm ashamed of my body.</td>
</tr>
<tr>
<td>145.</td>
<td>Nobody seems to care about me at home.</td>
</tr>
<tr>
<td>157.</td>
<td>I can control my feelings easily.</td>
</tr>
</tbody>
</table>

**General questions:** Please answer ALL of the following questions. Your answers are completely confidential.

1. Date of birth: _____ (day) _____ (month) 198____ (year)

2. Your sex: Male _____ Female _____ (please tick)

3. My parents are separated . . . . . . . . . . . . . . Yes _____ No _____ (please tick)

4. One or both of my parents has died . . . . Yes _____ No _____ (please tick)

5. I have seriously considered running away from home . . . . . . . . . Yes _____ No _____ (please tick)

6. I have run away from home: Yes _____ How many times have you run away? _____ times. (Please go on to question 7)
   No _____ (Please go to question 8)

7. The last time you ran away, how long were you away (tick one)? _____ a few hours
   _____ 1 day including overnight
   _____ 2 days to 1 week
   _____ 8 days to 1 month
   _____ more than 1 month

8. At some time between the ages of 0 and 2 years, I was in childcare for at least three days per week: Yes _____ No _____
   Don't know _____ (please tick)

9. Before today, I have spent at least one hour on the Reach Out! internet site . . . . . . . . . . . . . . Yes _____ No _____ (please tick)
Directions: The following questions list various attitudes and behaviours of parents. Please circle the number which best describes your MOTHER (or the person who has been a mother for you).

<table>
<thead>
<tr>
<th>My MOTHER:</th>
<th>Very like</th>
<th>Fairly like</th>
<th>Fairly unlike</th>
<th>Very unlike</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Spoke to me with a warm and friendly voice</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Did not help me as much as I needed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Let me do those things I liked doing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Seemed emotionally cold to me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Appeared to understand my problems and worries</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. Was affectionate to me</td>
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<tr>
<td>7. Liked me to make my own decisions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. Did not want me to grow up</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. Tried to control everything I did</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. Invaded my privacy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. Enjoyed talking things over with me</td>
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<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. Frequently smiled at me</td>
<td>1</td>
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<td>3</td>
<td>4</td>
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<td>13. Tended to baby me</td>
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<td>4</td>
</tr>
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<td>14. Did not seem to understand what I needed or wanted</td>
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<td>4</td>
</tr>
<tr>
<td>15. Let me decide things for myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16. Made me feel I wasn't wanted</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17. Could make me feel better when I was upset</td>
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<td>18. Did not talk with me very much</td>
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<td>4</td>
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<td>19. Tried to make me dependent on her</td>
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<td>4</td>
</tr>
<tr>
<td>20. Felt I could not look after myself unless she was around</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21. Gave me as much freedom as I wanted</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22. Let me go out as often as I wanted</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. Was overprotective of me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24. Did not praise me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25. Let me dress in any way I pleased</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Directions: The following questions list various attitudes and behaviours of parents. Please circle the number which best describes your FATHER (or the person who has been a father for you).

<table>
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<tr>
<th>My FATHER:</th>
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<td>4</td>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

THE END - THANK YOU
APPENDIX E

QUESTION-AND-ANSWER EXERCISE
AND REACH OUT! MAP
REACH OUT! EXPLORE

Here are some questions to help you explore the Reach Out! site, and get a free McDonald's award and food voucher. Answer the questions from information on the Reach Out! site, and return this questionnaire by __________ to __________, and you will receive both a food voucher and an award from McDonald's.

Also, come up with the best suggestion to improve the Reach Out! site, and you'll receive a $50.00 clothing voucher from Jay Jay's and a CD and shirt from CC music. The runner-up will receive a $25.00 clothing voucher from Jay Jay's and a CD from the Buzz magazine. Please write your name on the top of this page - right now.

1. My name is: .................................................................

2. My grade and form number are: ........................................

3. To have some fun, go to chill out!, then to Design Your Site and choose a look. Which look did you choose? .................................................................

4. Your best friend's girlfriend just dropped him and he wants to talk with someone anonymously. What is the phone number for Kids Helpline? It's free. (Go to chill out!, then Help kit.) .................................

5. Jayne's parents are arguing again. She's really distressed and has come to you for support. What can you do to help? (Again in chill out!, go to Help kit, and then to Help a friend.) .................................................................

6. Looking for a story that may help Jayne feel better. You discover the story by 'young person,' “Feeling depressed is not a strange disease.” What helped 'young person' through her or his difficulties? (In chill out!, go to Help kit, and then Stories.) .................................................................

   What didn't help? .................................................................

7. In chill out! go to Chill Café and check out Geekgirl. Then Send a Card to a friend.

8. Stay in chill out! and go to Spotlights. How old is Eden Gaha? .........................

   What kills his self-esteem? .................................................................

   From where does he draw his strength and inspiration? .................................
9. Still in chill out!, go to (Your) Issues. Choose a specific issue from the list, one that you want to find out more about, and write down what you learned. ........................
..........................................................................................................................
..........................................................................................................................

10. Mary heard that counselling can help you make some difficult decisions, but doesn’t know where in Geelong to go for free and confidential help. Go to Who Cares? and then Local Services. Where do they suggest that she go? .................................

******************************************************************************

What’s your suggestion to improve the Reach Out! site? Offer one of the best suggestions and win a prize. (Be sure that you also write this suggestion on the site. Go back to Chill Out!, then to Feedback – Your Say, question no. 15. While you’re there, answer questions nos. 1 - 14, too.)

..........................................................................................................................
..........................................................................................................................
..........................................................................................................................
..........................................................................................................................

******************************************************************************

If the questionnaire or activity has raised any issues for you that you would like to discuss further, people at the following agencies are available to assist you:

Your school – counsellor, psychologist, or welfare coordinator

Clockwork Geelong – Young Peoples’ Health Service, 60 Lt Malop St Counseling, Medical, Activities, Support 5222 6690
Bethany Family Support – Counseling, Housing, Disability Support 5278 8122
BAYSA – Counseling, Youth support, 44 Spring St., Geelong West 5221 4466
Child and Adolescent Mental Health Services (CAMHS) 5273 2200
Barwon Youth Accommodation Service (BYAS), also counselling 5223 2966
Kids Help Line (Freecall) 1 800 551 800 Life Line (24hr crisis line) 13 1114
EMERGENCY
Medical help
Safety
Counselling
Online support

SAMARITANS
"Listen up"
Training in listening
History & facts

WHEN TIMES ARE TOUGH - REACH OUT!
About Reach Out!
Social Change

CHILL OUT
for young people going through tough times
Design your site
Chill Cafe
*Scream it/Dream it
*Geekgirl
*Send a card
Your Issues
Help Kit
Who can help?
Getting the best help
Help a friend

FAMILY & FRIENDS
for older people concerned about someone they know
Big Picture
E-mail a friend
Parents' Soup
*Family issues

PROFESSIONAL FORUM
Discussion forum
Big picture
Media spotlight
News

WHO CARES?
Services available nationwide
Local services
Maps

AROUND REACH OUT!
net site: reachout.asn.au

INSPIRE FOUNDATION
APPENDIX F

THE MEASUREMENT MODELS FOR THE POMS SCALES

Table F1

*POMS Anger items with factor score weights*

<table>
<thead>
<tr>
<th>Item</th>
<th>Statement</th>
<th>Factor Score Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Angry</td>
<td>.09</td>
</tr>
<tr>
<td>6</td>
<td>Peeved</td>
<td>.08</td>
</tr>
<tr>
<td>11</td>
<td>Grouchy</td>
<td>.09</td>
</tr>
<tr>
<td>12</td>
<td>Spiteful</td>
<td>.06</td>
</tr>
<tr>
<td>18</td>
<td>Annoyed</td>
<td>.15</td>
</tr>
<tr>
<td>20</td>
<td>Resentful</td>
<td>.09</td>
</tr>
<tr>
<td>21</td>
<td>Bitter</td>
<td>.12</td>
</tr>
<tr>
<td>24</td>
<td>Ready to fight</td>
<td>.04</td>
</tr>
<tr>
<td>27</td>
<td>Rebellious</td>
<td>.05</td>
</tr>
<tr>
<td>28</td>
<td>Deceived</td>
<td>.07</td>
</tr>
<tr>
<td>35</td>
<td>Furious</td>
<td>.10</td>
</tr>
<tr>
<td>40</td>
<td>Bad-tempered</td>
<td>.08</td>
</tr>
</tbody>
</table>
Table F2

*POMS Anxiety items with factor score weights*

<table>
<thead>
<tr>
<th>Item</th>
<th>Statement</th>
<th>Factor Score Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Tense</td>
<td>.10</td>
</tr>
<tr>
<td>7</td>
<td>Shaky</td>
<td>.11</td>
</tr>
<tr>
<td>8</td>
<td>On edge</td>
<td>.15</td>
</tr>
<tr>
<td>15</td>
<td>Panicky</td>
<td>.13</td>
</tr>
<tr>
<td>17</td>
<td>Relaxed*</td>
<td>.02</td>
</tr>
<tr>
<td>23</td>
<td>Uneasy</td>
<td>.13</td>
</tr>
<tr>
<td>30</td>
<td>Nervous</td>
<td>.13</td>
</tr>
<tr>
<td>33</td>
<td>Anxious</td>
<td>.07</td>
</tr>
<tr>
<td>44</td>
<td>Restless</td>
<td>.04</td>
</tr>
</tbody>
</table>

*Note.* * item is reverse coded.

Table F3

*POMS Depression items with factor score weights*

<table>
<thead>
<tr>
<th>Depression Item</th>
<th>Statement</th>
<th>Factor Score Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Discouraged</td>
<td>.04</td>
</tr>
<tr>
<td>5</td>
<td>Unworthy</td>
<td>.05</td>
</tr>
<tr>
<td>9</td>
<td>Gloomy</td>
<td>.03</td>
</tr>
<tr>
<td>13</td>
<td>Terrified</td>
<td>.04</td>
</tr>
<tr>
<td>16</td>
<td>Blue</td>
<td>.06</td>
</tr>
<tr>
<td>22</td>
<td>Miserable</td>
<td>.07</td>
</tr>
<tr>
<td>25</td>
<td>Guilty</td>
<td>.03</td>
</tr>
<tr>
<td>29</td>
<td>Desperate</td>
<td>.04</td>
</tr>
<tr>
<td>31</td>
<td>Worthless</td>
<td>.06</td>
</tr>
<tr>
<td>34</td>
<td>Lonely</td>
<td>.04</td>
</tr>
<tr>
<td>36</td>
<td>Helpless</td>
<td>.07</td>
</tr>
<tr>
<td>39</td>
<td>Unhappy</td>
<td>.06</td>
</tr>
<tr>
<td>41</td>
<td>Sorry</td>
<td>.03</td>
</tr>
<tr>
<td>42</td>
<td>Sad</td>
<td>.08</td>
</tr>
<tr>
<td>43</td>
<td>Hopeless</td>
<td>.08</td>
</tr>
</tbody>
</table>
APPENDIX G

INTERVIEW SCHEDULE – PHASES 2 AND 3

INTERVIEW SCHEDULE III

The answers you give to the following questions will be totally confidential. As soon as these papers are collected, the front page with your name will be removed and your answers will be identified by numbers only. Your names are being kept in order that your answers today may be compared with your answers in 12 months time. This is being done for research purposes only, and the list of names and the answer sheets will be locked away in different places. No one will know what answers you have given except yourself. The only exception to keeping your answers confidential, as previously, is that if your score for suicide is unusually high, you will be contacted and support will be offered. Please contact one of the agencies on the list of names provided to discuss any issues that may have been raised for you.

Please answer all questions honestly as this research may help you and others in the future. Thank you for your cooperation.

1. Name: ________________________________________________

2. Grade/Year ________________________________________________

3. Please tick the approximate number of hours that you have spent on the Reach Out! Internet site over the past 11 months.
   a) no time at all _________
   b) less than 2 hours _________
   c) between 2 and 3 hours _________
   d) more than 3 hours but less than 5 hours _________
   e) 5 hours or more _________

Identification Number: _______________________
(not to be filled in)

1.
**Directions:** Below is a list of words that describe feelings people have. Please read each one carefully. Then circle the number which best describes **HOW YOU HAVE BEEN FEELING DURING THE PAST FORTNIGHT INCLUDING TODAY**. The numbers refer to the following descriptive phrases:

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>1</td>
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| 27             |            |          |            |             |           |

| 28             |            |          |            |             |           |

| 29             |            |          |            |             |           |

| 30             |            |          |            |             |           |

| 31             |            |          |            |             |           |

| 32             |            |          |            |             |           |

| 33             |            |          |            |             |           |

| 34             |            |          |            |             |           |

| 35             |            |          |            |             |           |

| 36             |            |          |            |             |           |

| 37             |            |          |            |             |           |

| 38             |            |          |            |             |           |

| 39             |            |          |            |             |           |

| 40             |            |          |            |             |           |

| 41             |            |          |            |             |           |

| 42             |            |          |            |             |           |

| 43             |            |          |            |             |           |

| 44             |            |          |            |             |           |

2.
**Directions:** The following statements are statements that one might use to describe oneself. Read each statement and decide whether or not it describes you. If you agree that it does describe you, tick **YES**. If it does not describe you, tick **NO**.

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
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<tbody>
<tr>
<td>1. I try hard to do well at almost everything I do.</td>
<td></td>
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<tr>
<td>2. I like to follow instructions and do what others expect of me.</td>
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<td>3. I'm sure of my feelings about most things.</td>
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<tr>
<td>4. I always try to do what is proper.</td>
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<td>5. I am a quiet and cooperative person.</td>
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<tr>
<td>6. I get so touchy that I can't talk about certain things.</td>
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<tr>
<td>7. I often think about ending my life.</td>
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<tr>
<td>8. I have a strong need to feel like an important person.</td>
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<tr>
<td>9. I like the way I look.</td>
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<tr>
<td>10. I have more friends than I can keep up with.</td>
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<td>11. I am very uneasy when I'm supposed to tell people what to do.</td>
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<td>12. I enjoy thinking about sex.</td>
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<tr>
<td>13. I do my very best not to hurt people's feelings.</td>
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<tr>
<td>14. I have told at least one other person that I am going to take my life.</td>
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<tr>
<td>15. I look forward to growing up and making something of myself.</td>
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<tr>
<td>16. Rather than demand things, people can get what they want by being gentle and thoughtful.</td>
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<tr>
<td>17. It is very important that children learn to obey their elders.</td>
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<tr>
<td>18. In this world, you either push or get shoved.</td>
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<tr>
<td>19. My social life is very satisfying to me.</td>
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<tr>
<td>20. When someone hurts me, I try to forget it.</td>
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<tr>
<td>21. If I see a person I know from a distance, I usually try to avoid them.</td>
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<td>22. My parents are very kind to me.</td>
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<td>23. I think I have a good build.</td>
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<tr>
<td>24. I have almost no close ties with others my age.</td>
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<tr>
<td>25. I have faith that human nature is good.</td>
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</tr>
<tr>
<td>26. I have a better idea of the kind of person I am than other adolescents do.</td>
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<tr>
<td>27. I have deliberately injured or harmed myself.</td>
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<tr>
<td>28. My friends seem to turn to me more than to others when they have problems.</td>
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<tr>
<td>29. I make friends easily.</td>
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<td>30. I don't like looking at myself in the mirror.</td>
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<tr>
<td>31. I usually let other people have their own way.</td>
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<tr>
<td>32. I'm always busy in lots of social activities.</td>
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<tr>
<td>33. I have worked out a general way to end my life.</td>
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<tr>
<td>34. Other people my age seem more sure than I am of who they are and what they want.</td>
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<tr>
<td>35. I can depend on my parents to be understanding of me.</td>
<td></td>
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<td>36. I own my own house.</td>
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<tr>
<td>37. I find it hard to feel sorry for people who are always worried about things.</td>
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<tr>
<td>38. I seem to have a problem getting along with other adolescents.</td>
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<tr>
<td>39. I would much rather follow someone than be the leader.</td>
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<tr>
<td>40. To get ahead in this world I'm willing to push people who get in my way.</td>
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<tr>
<td>41. I am pleased with the way my body has developed.</td>
<td></td>
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<tr>
<td>42. I feel pretty aimless and don't know where I'm going.</td>
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<tr>
<td>43. I do my best to stop anyone from trying to boss me.</td>
<td></td>
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<tr>
<td>44. I am a dramatic and showy sort of person.</td>
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<tr>
<td>45. I sometimes feel I am in this world all alone.</td>
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<tr>
<td>46. I would rather be direct with people than avoid telling them something they don't like.</td>
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<tr>
<td>47. I'm pretty immature about sexual matters.</td>
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<tr>
<td>48. Among the most important things a person can have are a strong will and the drive to get ahead.</td>
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<tr>
<td>49. I very often think I am not wanted by others in a group.</td>
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<tr>
<td>50. Others my age seem to have things together better than I do.</td>
<td></td>
</tr>
<tr>
<td>51. People can influence me quite easily.</td>
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<tr>
<td>52. I often feel so angry that I want to throw and break things.</td>
<td></td>
</tr>
<tr>
<td>53. I guess I depend too much on others to be helpful to me.</td>
<td></td>
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<tr>
<td>54. I'm not answering these questions honestly at all.</td>
<td></td>
</tr>
<tr>
<td>55. I have a pretty hot temper.</td>
<td></td>
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<tr>
<td>56. I feel left out of things socially.</td>
<td></td>
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<tr>
<td>57. I like to be the one in authority to take charge of things.</td>
<td></td>
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<tr>
<td>58. I have tried to kill myself.</td>
<td></td>
</tr>
<tr>
<td>59. I don't mind that other adolescents are not interested in my friendship.</td>
<td></td>
</tr>
<tr>
<td>60. I am very pleased with all the things I have done up to now.</td>
<td></td>
</tr>
<tr>
<td>61. I get very frightened when I think of being alone in the world.</td>
<td></td>
</tr>
<tr>
<td>62. I don't depend much on other people for friendship.</td>
<td></td>
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<tr>
<td>63. I doubt if I'll make much of myself in life.</td>
<td></td>
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<tr>
<td>64. A quiet hobby is more fun for me than a party</td>
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<tr>
<td>65. I sometimes believe life is not worth living.</td>
<td></td>
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<tr>
<td>66. I get upset when I see a very sick person.</td>
<td></td>
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<tr>
<td>67. I'm among the more popular kids at school.</td>
<td></td>
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### Directions:
The following questions list various attitudes and behaviours of parents. Please circle the number which best describes your **MOTHER** (or the person who has been a mother for you).

<table>
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<tr>
<th>My MOTHER:</th>
<th>Very like</th>
<th>Fairly like</th>
<th>Fairly unlike</th>
<th>Very unlike</th>
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<td>1. Spoke to me with a warm and friendly voice</td>
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<td>2. Did not help me as much as I needed</td>
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